EDUCATIONAL REVIEW

MARCH, 1898

I

THE LOGIC OF MATHEMATICS IN RELATION TO EDUCATION

§ 1 *Of mathematics in general*

In order to understand what number is, it is necessary first to acquaint ourselves with the nature of the business of mathematics in which number is employed.

I wish I knew with certainty the precise origin of the definition of mathematics as the science of quantity. It certainly cannot be Greek, because the Greeks were advanced in projective geometry, whose problems are such as these: whether or not four points obtained in a given way lie in one plane; whether or not four planes have a point in common; whether or not two rays (or unlimited straight lines) intersect, and the like—problems which have nothing to do with quantity, as such. Aristotle names, as the subjects of mathematical study, quantity and continuity. But though he never gives a formal definition of mathematics, he makes quite clear, in more than a dozen places, his view that mathematics ought not to be defined by the things which it studies but by its peculiar mode and degree of abstractness. Precisely what he conceives this to be it would require me to go too far into the technicalities of his philosophy to explain; and I do not suppose anybody would to-day regard the details of his opinion as important for my purpose. Geometry, arithmetic, astronomy, and music were, in the Roman schools of the

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fifth century [1] and earlier, recognized as the four branches of mathematics. And we find Boethius (A. D. 500) defining them as the arts which relate, not to quantity, but to *quantities*, or *quanta*. What this would seem to imply is, that mathematics is the foundation of the minutely exact sciences; but really it is not worth our while, for the present purpose, to ascertain what the schoolmasters of that degenerate age conceived mathematics to be.

In modern times projective geometry was, until the middle of this century, almost forgotten, the extraordinary book of Desargues [2] having been completely lost until, in 1845, Chasles came across a MS. copy of it; and, especially before imaginaries became very prominent, the definition of mathematics as the science of quantity suited well enough such mathematics as existed in the seventeenth and eighteenth centuries.

Kant, in the *Critique of pure reason* (Methodology, chapter I, section 1), distinctly rejects the definition of mathematics as the science of quantity. What really distinguishes mathematics, according to him, is not the subject of which it treats, but its method, which consists in studying constructions, or diagrams. That such is its method is unquestionably correct; for, even in algebra, the great purpose which the symbolism subserves is to bring a skeleton representation of the relations concerned in the problem before the mind's eye in a schematic shape, which can be studied much as a geometrical figure is studied.

But Rowan Hamilton and De Morgan, having a superficial acquaintance with Kant, were just enough influenced by the *Critique* to be led, when they found reason for rejecting the definition as the science of quantity, to conclude that mathematics was the science of pure time and pure space. Notwithstanding the profound deference which every mathematician must pay to Hamilton's opinions and my own admiration for De Morgan, I must say that it is rare to meet with a

[1] Davidson, *Aristotle and the ancient educational ideals.* Appendix: The Seven Liberal Arts. (New York: Charles Scribner's Sons.)

[2] Brouillon, *Proiet d'une atteinte aux événemens des rencontres du cône avec son plan*, 1639.

careful definition of a science so extremely objectionable as this. If Hamilton and De Morgan had attentively read what Kant himself has to say about number, in the first chapter of the *Analytic of principles* and elsewhere, they would have seen that it has no more to do with time and space than has every conception. Hamilton's intention probably was, by means of this definition, to throw a slur upon the introduction of imaginaries into geometry, as a false science; but what De Morgan, who was a student of multiple algebra, and whose own formal logic is plainly mathematical, could have had in view, it is hard to comprehend, unless he wished to oppose Boole's theory of logic. Not only do mathematicians study hypotheses which, both in truth and according to the Kantian epistemology, no otherwise relate to time and space than do all hypotheses whatsoever, but we now all clearly see, since the non-Euclidean geometry has become familiar to us, that there *is* a real science of space and a real science of time, and that these sciences are positive and experiential—branches of physics, and so not mathematical except in the sense in which thermotics and electricity are mathematical; that is, as calling in the aid of mathematics. But the gravest objection of all to the definition is that it altogether ignores the veritable characteristics of this science, as they were pointed out by Aristotle and by Kant.

Of late decades philosophical mathematicians have come to a pretty just understanding of the nature of their own pursuit. I do not know that anybody struck the true note before Benjamin Pierce, who, in 1870,[3] declared mathematics to be "the science which draws necessary conclusions," adding that it must be defined "subjectively" and not "objectively." A view substantially in accord with his, though needlessly complicated, is given in the article Mathematics, in the ninth edition of the *Encyclopædia Britannica*. The author, Professor George Chrystal, holds that the essence of mathematics lies in its making pure hypotheses, and in the character of the hypotheses which it makes. What the mathematicians mean

[3] In his *Linear associative algebra*.

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by a "hypothesis" is a proposition imagined to be strictly true of an ideal state of things. In this sense, it is only about hypotheses that necessary reasoning has any application; for, in regard to the real world, we have no right to presume that any given intelligible proposition is true in absolute strictness. On the other hand, probable reasoning deals with the ordinary course of experience; now, nothing like *a course of experience* exists for ideal hypotheses. Hence to say that mathematics busies itself in drawing necessary conclusions, and to say that it busies itself with hypotheses, are two statements which the logician perceives come to the same thing.

A simple way of arriving at a true conception of the mathematician's business is to consider what service it is which he is called in to render in the course of any scientific or other inquiry. Mathematics has always been more or less a trade. An engineer, or a business company (say, an insurance company), or a buyer (say, of land), or a physicist, finds it suits his purpose to ascertain what the necessary consequences of possible facts would be; but the facts are so complicated that he cannot deal with them in his usual way. He calls upon a mathematician and states the question. Now the mathematician does not conceive it to be any part of his duty to verify the facts stated. He accepts them absolutely without question. He does not in the least care whether they are correct or not. He finds, however, in almost every case that the statement has one inconvenience, and in many cases that it has a second. The first inconvenience is that, though the statement may not at first sound very complicated, yet, when it is accurately analyzed, it is found to imply so intricate a condition of things that it far surpasses the power of the mathematician to say with exactitude what its consequence would be. At the same time, it frequently happens that the facts, as stated, are insufficient to answer the question that is put. Accordingly, the first business of the mathematician, often a most difficult task, is to frame another simpler but quite fictitious problem (supplemented, perhaps, by some supposition), which shall be within his powers, while at the same time it is sufficiently like the problem set before him to an-

swer, well or ill, as a substitute for it.[4] This substituted problem differs also from that which was first set before the mathematician in another respect: namely, that it is highly abstract. All features that have no bearing upon the relations of the premises to the conclusion are effaced and obliterated. The skeletonization or diagrammatization of the problem serves more purposes than one; but its principal purpose is to strip the significant relations of all disguise. Only one kind of concrete clothing is permitted—namely, such as, whether from habit or from the constitution of the mind, has become so familiar that it decidedly aids in tracing the consequences of the hypothesis. Thus, the mathematician does two very different things: namely, he first frames a pure hypothesis stripped of all features which do not concern the drawing of consequences from it, and this he does without inquiring or caring whether it agrees with the actual facts or not; and, secondly, he proceeds to draw necessary consequences from that hypothesis.

Kant is entirely right in saying that, in drawing those consequences, the mathematician uses what, in geometry, is called a "construction," or in general a diagram, or visual array of characters or lines. Such a construction is formed according to a precept furnished by the hypothesis. Being formed, the construction is submitted to the scrutiny of observation, and new relations are discovered among its parts, not stated in the precept by which it was formed, and are found, by a little mental experimentation, to be such that they will always be present in such a construction. Thus, the necessary reasoning of mathematics is performed by means of observation and experiment, and its necessary character is due simply to the circumstance that the subject of this observation and experiment is a diagram of our own creation, the conditions of whose being we know all about.

But Kant, owing to the slight development which formal logic had received in his time, and especially owing to his total ignorance of the logic of relatives, which throws a brilliant light upon the whole of logic, fell into error in supposing

[4] See this well put in Thomson and Tait's *Natural philosophy*, § 447.

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that mathematical and philosophical necessary reasoning are distinguished by the circumstance that the former uses constructions. This is not true. All necessary reasoning whatsoever proceeds by constructions; and the only difference between mathematical and philosophical necessary deductions is that the latter are so excessively simple that the construction attracts no attention and is overlooked. The construction exists in the simplest syllogism in Barbara. Why do the logicians like to state a syllogism by writing the major premise on one line and the minor below it, with letters substituted for the subject and predicates? It is merely because the reasoner has to notice that relation between the parts of those premises which such a diagram brings into prominence. If the reasoner makes use of syllogistic in drawing his conclusion, he has such a diagram or construction in his mind's eye, and observes the result of eliminating the middle term. If, however, he trusts to his unaided reason, he still uses some kind of a diagram which is familiar to him personally. The true difference between the necessary logic of philosophy and mathematics is merely one of degree. It is that, in mathematics, the reasoning is frightfully intricate, while the elementary conceptions are of the last degree of familiarity; in contrast to philosophy, where the reasonings are as simple as they can be, while the elementary conceptions are abstruse and hard to get clearly apprehended. But there is another much deeper line of demarcation between the two sciences. It is that mathematics studies nothing but pure hypotheses, and is the only science which never inquires what the actual facts are; while philosophy, although it uses no microscopes or other apparatus of special observation, is really an experimental science, resting on that experience which is common to us all; so that its principal reasonings are not mathematically necessary at all, but are only necessary in the sense that all the world knows beyond all doubt those truths of experience upon which philosophy is founded. This is why the mathematician holds the reasoning of the metaphysician in supreme contempt, while he himself, when he ventures into philosophy, is apt to reason fantastically and not solidly, be-

cause he does not recognize that he is upon ground where elaborate deduction is of no more avail than it is in chemistry or biology.

I have thus set forth what I believe to be the prevalent opinion of philosophical mathematicians concerning the nature of their science. It will be found to be significant for the question of number. But were I to drop this branch of the subject without saying one word more, my criticism of the old definition, "mathematics is the science of quantity," would not be quite just. It must be admitted that quantity is useful in almost every branch of mathematics. Jevons wrote a book entitled *Pure logic, the science of quality*, which expounded, with a certain modification, the logical algebra of Boole. But it is a mistake to regard that algebra as one in which there is no system of quantity. As Boole rightly holds, there is a quadratic equation which is fundamental in it. The meaning of that equation may be expressed as follows: Every proposition has one or other of two *values*, being either *true* (which gives it one value) or *false* (which gives it the other). So stated, we see that the algebra of Boole is nothing but the algebra of that system of quantities which has but two values—the simplest conceivable system of quantity. The widow of the great Boole has lately written a little book [5] in which she points out that, in solving a mathematical problem, we usually introduce some part or element into the construction which, when it has served our purpose, is removed. Of that nature is a scale of quantity, together with the apparatus by which it is transported unchanged from one part of the diagram to another, for the purpose of comparing those two parts. Something of this general description seems to be indispensable in mathematics. Take, for example, the Theorem of Pappus concerning ten rays in a plane. The demonstration of it which is now usual, that of von Staudt, introduces a third dimension; and the utility of that arises from the fact that a ray, or unlimited straight line, being the intersection of two planes, these planes show us exactly where the ray runs, while, as long as we confine our-

[5] *The Mathematical Psychology of Boole and Gratry.*

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selves to the consideration of a single plane, we have no easy method of describing precisely what the course of the ray is. Now this is not precisely a system of quantity; but it is closely analogous to such a system, and that it serves precisely the same purpose will appear when we remember that that same theorem can easily (though not *so* easily) be demonstrated by means of the barycentric calculus. Although, then, it is not true that all mathematics is a science of quantity, yet it is true that all mathematics makes use of a scaffolding altogether *analogous* to a system of quantity; and quantity itself has more or less utility in every branch of mathematics which has as yet developed into any large theory.

I have only to add that the hypotheses of mathematics may be divided into those *general hypotheses* which are adhered to throughout a whole branch of mathematics, and the *particular hypotheses* which are peculiar to different special problems.

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(To be continued)

II

THE PROBLEM OF OCCUPATION FOR COLLEGE WOMEN[1]

When the college woman sets out to earn a living, the chances are that she will think first, as a matter of course, of teaching, and, in nine cases out of ten, that she will finally decide to take up that pursuit.

The records of Bryn Mawr College show that of the 57 per cent. of its graduates who have at some time engaged in paid occupations, 86 per cent., or 49 per cent. of the whole number graduated, have been or are now teachers. These records were chosen for reference in the study of the present problem notwithstanding the comparatively brief period they cover, because they have been kept with unusual care, and afford an unusual amount of detail; and that they present a case fairly typical, not merely of collegiate but of general conditions, may be inferred from the testimony of general statistics. The census of 1890 gives 311,682 women following professional pursuits,—a class roughly comparable to the total class of wage-earners shown in college records,—and of these, 245,230, or about 80 per cent., are teachers, a figure very near to the 85 per cent. which represents the proportion of teachers to all occupied among the graduates of the College just mentioned.

The records of a man's college would show a different state of things. Not 57 per cent., but practically all graduates engage in some remunerative occupation, and, of those occupied, a far lower proportion than among women-graduates are engaged in teaching. General statistics, also, show a reversal between the proportions of men and women teachers to all employed of each sex respectively. From the census of 1890 it is found that, of the 632,641 men in professional pursuits at that time (again comparing this class to that of

[1] A paper presented to the Association of Collegiate Alumnæ.

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"all occupations" among college graduates) 96,581 are teachers, or only about 15 per cent. of the whole. The present feminine drift toward school-teaching is thrown into further relief by the additional fact drawn from this census report that, while women are only 33 per cent. of the professional class as a whole, they constitute 71 per cent. of the teachers.

In the records of the woman's college above referred to, the history after graduation of eight classes is given, covering a total period of eight years, which includes one full year of experience for the latest class recorded, after taking the A. B. degree. From these records the following details are to be gathered, which may be expressed in tabular form as follows:

Class of	*Per cent. of class engaged in teaching at some time.*	*Per cent. of class teaching at time of last report.*	*Per cent. of teachers withdrawing from that occupation.*
1889	38	23	40
1890	46	31	33
1891	54	45	17
1892	53	47	10
1893	52	48	7
1894	50	50	none
1895	48	48	none
1896	50	50	none

These figures show for one thing that the tendency to engage in teaching is not appreciably on the decrease, at any rate for a period of eight years, in successive classes. It is also shown by the figures that withdrawals of those who have once taken up teaching do not begin, to any considerable extent, under a period of five or six years, and, so far as these records can tell the tale, many remain in that occupation after all withdrawals. Making some further allowance for those who did not begin to teach immediately after graduation, and those who have not taught continuously, we may fairly conclude from the above that an average teaching period of four years for each graduate who engages in teaching is none too generous a calculation.

Classifying according to the highest positions reached in each individual case the teachers sent out by this college, we

shall find them distributed in the following proportion: private tutors, 9 per cent.; college professors and instructors, 17 per cent.; instructors in public high schools, presumably doing collegiate preparatory work, 12 per cent.; instructors in private preparatory schools, 62 per cent. Members of the last two divisions may be classed together, as doing practically the same work, though under different auspices; and we may say that of all who had taught at some time or other, 74 per cent. had been employed, in the highest positions attained by them, in preparing students for college.

Let the above figures be taken as the basis of a rough estimate as to the probable opportunity of any given college class to-day, or in the near future, for employment in teaching.

If we assume for the members of the hypothetical class under consideration a tendency to teaching at the present rate,—about 50 per cent. of the class,—and a proportion of collegiate instructors and preparatory teachers to the total of teachers sent out by the class such as we have seen to exist in practice,—17 per cent. and 74 per cent., respectively,—and an average teaching period of four years for each (above indicated as a probable one), it is easily seen that in replacing the class numbers—in perpetuating their own generation, so to speak—the collegiate instructors sent out by the class ($8\frac{1}{2}$ per cent. of the whole) may each find occupation in fitting 12 students for graduation from college, while the preparatory teachers (37 per cent. of the whole) may each find occupation in fitting 3 students for entrance to college.

Put in this way the proportion of teachers to the number to be taught is rather startling, for, except in unusual circumstances, the teacher can scarcely expect to find in the instructing of 3, or even of 12 students, an adequate means of support. The proportion must, however, be modified in several ways. It must be stated first that this numerical way of presenting the matter is not intended as a hard and fast reduction of the problem to mathematical certainty. The data here dealt with are too few, the period covered too brief, to allow of even an approach to this. But by putting what is

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tolerably well established as a matter of common observation into the definite forms of numbers, a more distinct image of the case is presented, and no serious danger is run that anyone will be misled by a substantial error of fact. It is, then, as a pictorial symbol rather than as a mathematical formula, as showing quality rather than quantity, direction of tendency rather than its exact weight, that the above numerical statements are to be regarded.

Furthermore, this assumed numerical proportion must be modified even as to figures. First, and most obviously, it is to be noticed that successive college classes—in the colleges for women, at any rate—show a large successive increase, so that for the present the college graduate in a collegiate position may count upon the opportunity of instructing classes larger than her own; while the preparatory teacher may count upon preparing students for college classes larger still, since the advancing wave of increase in the college is necessarily felt from one to four years earlier in the preparatory school.

Again, to those whom the collegiate or preparatory instructor may find occupation in teaching must be added the considerable number of students who take incomplete preparatory or collegiate courses, and either do not enter college at all, or are not finally graduated from it.

In these respects, then, the situation is better than it looks; in others it is worse. The pressure of competition is by no means completely shown by the proportion between the woman graduates actually engaged in teaching and the number to be taught. Those of the unoccupied who would teach if they could find suitable openings do not appear in the college records as a separate class, but, though unseen, they are not unfelt as a force in competition. With the knowledge of this reserve fund to draw upon at will, the employer, whether singular or corporate, has the employed at a relative disadvantage, and is less strictly constrained to regard for the standard of salary, or security of tenure, than he would otherwise be.

Besides this competition with the unemployed fellow-collegian the alumna has to meet that of the non-collegiate

woman, especially in the preparatory schools. While the holder of a college degree certainly has by so much the advantage over her competitor who is not thus armed, the latter may have other forces at command, such as present possession, personal favor, and special talent, that will suffice to close part of the field, at least, to the former.

The apparently more advantageous proportion between the number of women actually engaged in collegiate instruction and the number to be taught in that department is really the index of a serious disadvantage—a strong competition with men. In some colleges women are pushed out of it altogether, or, rather, they never even enter it. The woman who was graduated from either a co-educational college or a so-called "annex," on the plan of Barnard or Radcliffe, has had, so far, practically no chance at all of replacing her own class proportion in her own college, and must crowd graduates of the colleges in which women may teach, in competition for places there. Even in these colleges, competition with men is felt. Of the four principal Eastern colleges for women, one has a preponderance of men on its teaching staff; two employ one man to three women, approximately, and the fourth, only, offers a practically free field to women, who make up fifteen-sixteenths of its body of instruction. And this is not the whole story. Dividing collegiate positions into professorial (including professors, assistant professors, etc.) and non-professorial (including instructors, associates, assistants, tutors, readers, demonstrators, and the like), we find the proportion of men to women noticeably higher for the professorial positions than for the non-professorial. In the college first mentioned above, while women make up two-fifths of the entire staff, they are in only one-sixth of its professorial positions, while they comprise one-half of its instructors, readers, etc. Of the two colleges employing women in three-fourths of their posts, in one, women hold only three-sevenths of the professorial positions; in the other, about two-fifths, while in both cases practically all instructors are women. In the fourth college, only, is there approximate equality in the two proportions—indeed, there is a slight advantage to women

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in the professorial positions as compared with the instructorships, since, while the proportion of women to men on the entire list is 15:1, on the professorial list it is 16:1, and on the list of instructors, 14:1.

Another consideration to be borne in mind, as one thinks of future conditions, is that the present astonishing rate of increase in college classes, which is affording occasion for the wider and wider employment of college instructors, is not to be counted on forever. The colleges are extending their advantages yearly to a broader circle; but, sooner or later, the limits of normal acceptance of these advantages will be reached, and increase will then be restricted more or less closely to the natural increase of population, which is, it is hardly necessary to say, much less rapid than the present increase yearly of our feminine college population.

Again, increase in numbers at colleges is in itself no sign of proportionate increase either in the number of teaching positions or in the salaries paid. Since the student's tuition fees do not meet the full expense of her education, the remainder must come out of an endowment fund, usually administered so as to afford from the beginning, as nearly as it can be figured out, the greatest amount of instruction for the highest number at the lowest rates. This is the point the college starts from, and increase in numbers, unaccompanied with corresponding increase in endowments, as is too often the case, means a progressive increase in the average number of students to each instructor for the same salary, followed by a progressive decrease in average salary as numbers press too hardly upon the original teaching force, and teachers not provided for in the original endowment must be added.

The evil results to the teacher herself of this overcrowding of her profession are many and open. First, she must accept a low rate of pay for her work; next, she must, in many cases, be content with an inferior position; furthermore, she must lengthen her period of preparation, not always with advantage to the work she wants to do, in order to stand any chance of place and salary at all. If twenty women are adequately

prepared to take ten places, the choice among them cannot be made on the ground of the presence or absence of the necessary preparation, for all have it. And so the effort is made, on the part of each of these twenty competitors, to secure for herself some extra adornment in the way of a higher degree, a prize, or a fellowship, that will serve to distinguish her from the rest, and so mark her out for notice. To such effort as this there is no satisfactory conclusion. Either all will, in the end, go through with the same amount of extra preparation, and competition will be as severe as before, or the few, as soon as they are approached by the many, will invent for themselves new means of distinction, involving still greater expense of time and labor for something that is, by hypothesis, unnecessary, that is not always an advantage, and that may be a positive disadvantage.

As another result of the present severe pressure upon the teaching profession, the teacher, even after embarking on her chosen career, is not certain of being able to continue in it. A life-pursuit—one that is at the start known and felt to be such—is a stable center around which cluster thought, impulse, and effort in a rich, mutually supporting, and constantly growing whole, meaning not only an effectiveness of work unattainable in day-to-day employments, but a growing pleasure and delight to the worker, as purpose develops and power expands. Such a center of power the teacher has no assurance of finding in her profession, so uncertain is her tenure and so many her changes.

Women's wages in teaching are not only absolutely low, considered as a reward for the work done, but relatively low, considered with reference to another class of workers engaged in doing the same work. Teaching seems to be the one occupation in which there is most open and acknowledged equivalence of service rendered by the best women and the best men respectively, and in which there is most disparity of pay. Testimony upon this point is to be had in plenty. To those placed in such a false position must result a certain loss of self-respect and self-valuation that cannot but have its ultimate effect in lowering character and even standard of achievement.

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It is also a disadvantage to the worker to be engaged in an occupation for which she has no especial taste and talent; and this must happen to many, where such a disproportionately large number enter one field. It cannot be assumed that 50 per cent. of all college women have special gifts in the same direction. Indeed, experience shows that this is not so, and that the special gift for teaching is as rare as other talents, and as valuable, when it finds its true expression.

The personal pain and discomfort of the worker are not the only bad result that follows such a misfit; the community, as well as the teacher, must suffer. The school cannot always be sure of selecting the best from the great mass of material of mingled quality daily offered it; and the consequence is that the community is often badly served in the schools when it might be well served by the same persons in some other occupation.

The same general consideration of public utility prompts an inquiry into the nature of the influence this great proportion of teachers exerts upon the colleges which send them out. The college is not to be regarded merely as a means of personal gratification and profit to the collegian, but as an uplifting and broadening force for society as a whole. There can be no doubt but that, so long as the woman's college is mainly a fitting school for teachers, it fails of its widest reach as such a force. It is a matter of open comment and criticism that the woman's college is not broadening but narrowing in its tendencies, for this very reason. The man's college is, in greater or less degree, an epitome of the world at large, and, one may hazard the guess, it is not so much the attraction of the higher salaries prevailing in the man's college, but of more interesting work, that draws there certain talented men whom we can ill spare from instruction in the woman's college. There is a natural stimulus in the thought that one is influencing by his teaching those who will, in turn, influence the course of affairs in every department of active life. Teaching to prepare more teachers is, no doubt, a noble occupation, and not to be undervalued, but there is an element of monotony in it, arising both from the uniformity of

proposed pursuit in the students and from the too great nearness of that pursuit to the professor's daily employment. Much of this increased interest felt in students at the man's college arises from imagination, pure and simple, but it is no less real and effective as a force for all that. Without this power of imagination it is hard to see how any great distinction in undergraduate work can be made on the ground of sex. How can anyone who has had daily experience with it fail to recognize that, whether done by girls or boys, it is all much alike,—undifferentiated, immature, tame, unformed, unoriginal,—both boys and girls "following copy" consistently and slavishly, with only now and then a flash that is an indication to the hopeful of something better by and by? But in view of what the boy may be—the future man of mark in the great world—the instructor sees meaning and anticipatory value in his early efforts, while the assumption of a narrow sphere of activity for the girl deprives her work, in large part, of such significance and interest.

This feeling was expressed in plain terms last summer by an English review writer, discussing the question so absorbing at that moment—the proposed admission of women to the Cambridge degrees. To his mind the chief reason for excluding women from acknowledged membership in the university was that the influence of a body of future teachers as undergraduates and a body of actual teachers as graduates with weight in guiding its policy, would be highly detrimental to its best interests; and, even while he politely deprecates the comparison as cruel, even in the bare presentation of fact, he asks us to look at the body of women graduates on the one hand, and the body of men graduates on the other —the women representing one interest, and that in its lower stages; the men representing every highest and broadest form of activity in the United Kingdom.

The narrowing influence of a college which is, to all intents and purposes, a training school for teachers, acts and reacts between college and student. The latter takes up her work more or less biased by thought of her future employment; the former, in turn, insensibly adapts its instruction to

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the character and tastes of those it instructs, while they, again, are thereby the more confirmed in their already formed tendency in one direction.

The remedy for all this is plain—that women who graduate from colleges with the intention of earning a living should begin to look about for other occupations than school-teaching. In that profession itself an improvement would be felt at once. With lowered competition not only would salaries be raised, but quality of service also. In certain fields the stronger the competition the better the quality of those who finally win in it. It is not always so in teaching. Conditions are such that it is difficult for the school or the college to apply satisfactory tests to the teaching gift, and recourse must be had to tests that are more or less arbitrary, such as degrees, records of scholarship, length of preparation, etc. The best selective process is that which the student applies herself: the choice or refusal of an occupation according to genuine taste and inclination. While it does happen occasionally that one is eager to follow a calling for which one is really unfitted, in general it may be expected that good service is surer to be rendered in a congenial occupation than in an uncongenial one. By such voluntary withdrawal of those not spontaneously attracted to teaching, the service is benefited doubly; not only by the absence of the unfit, who would otherwise be in it, but by the presence of others, of real ability and talent for teaching, who would otherwise be out of it, through discouragement at the crowded condition of the occupation and the low level of reward.

If the graduate is not to teach, what may she do? Practically the whole field of employment is open to her. Of the 128 general occupations classified in the census of 1890, one only, that of "soldiers, sailors, and marines" has no feminine representatives, and, even as sailors, women are found under the further heading of "trade and transportation." In short, there seems to be to-day no impervious barrier to keep women out of any pursuit they may choose to follow. Why, then, do they continue to crowd one occupation, to their own disadvantage and that of the community? The reason is

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plain. Custom has instilled into women a fear of risk, of responsibility, of expense, of publicity, of change, and of novelty; and, in teaching, the average person thinks she can more easily avoid these dangers than in other occupations. The teacher is engaged for a definite period, for a fixed salary, for definite work, which is largely mapped out for her in customary requirements, and is largely done under direction. Since it is an old occupation she feels less publicity in engaging in it than in others, and in it she escapes the dreaded sting of novelty. This occupation she thinks she can enter at leaving college, and so can do without the extra expense of such a preparation as is needed for the practice of law or medicine; while the reward offered, expressed in terms of money, appears large to her, accustomed as she is to the usual recompense for feminine service—board-and-clothes wages. But looking more closely at actual present conditions, we shall find that much of what the teacher dreads in other occupations is already involved in her own. The element of risk is entering more and more into the teacher's profession; there is growing uncertainty as to securing a position in the first place, there is the further uncertainty of receiving the salary or remaining for the time agreed upon. The teacher in a private school, even if she is theoretically independent of its business chances with her fixed stipend, is practically quite dependent on them. If resources fall below liabilities, her pay is involved as well as the proprietor's investment. There is, too, a growing hazard of expense in preparation for the work, as the competition grows greater. It is about as necessary to-day for the A. B. to spend three or four years in a graduate school or a normal school, for any certainty of success in obtaining a post, as for the intending physician to spend three or four years in the medical school. As for publicity, it is beginning to be generally recognized that not so much what is done, but how it is done, determines conspicuity.

Certain of the fears above mentioned are, furthermore, unfounded in any case, and are rather survivals from past conditions than reflections of the present. Risk, for ex-

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ample, is not in itself an evil to be avoided at any and all cost. It is rather to be sought, under proper conditions, as the first step in industrial progress. Risk is, in fact, the most characteristic feature of our industrial system to-day. The worker or producer who wishes to offer a service or a product to the community must guess beforehand what it is likely to want and to pay for, and must stake time and money in the materialization of his guess. The more original the thought, and the more important the offering, the greater the risk, but the greater the reward in case of success. The new product or service may not be accepted at all; but if it is, it will be with the fresh eagerness of a want as yet undulled by surfeit of similar products or services. The important offering demands usually a greater outlay of time and money, in getting it ready for the public, than does the everyday trifle; but the payment it deserves is proportionately high. If the worker is not ready to venture something, he must be content to receive little or nothing; and this applies without distinction of sex. Necessity pushes the man into assuming risk. The small salary of clerk or bookkeeper does not suffice for the needs of his growing family, so he incurs the chances of loss for the sake of chances of greater gain in a business of his own. And public opinion supports him in doing this. The woman is not so supported, either by the opinion of others or her own. The son of the house thinks nothing of trying one venture after another, living upon his father the while, and his father regards it as quite proper that he should do so. The daughter, on the other hand, after the least allowable degree of preparation, feels that enough money has been spent upon her, and is in a frenzy to set about regular wage-earning at once; and the father, who would cheerfully give her a living, if she were to abandon the idea of earning it, would look doubtfully at the proposition to supply her an equivalent amount as a business investment. But the results, in case of failure, are no more unfortunate for the woman than the man; they are, indeed, often less so. The same cause that drives him into incurring risks makes it peculiarly disastrous to him if he fail—the burden of a help-

less family. The woman has no more than this, and, in many cases, not this.

Risk implies responsibility. The one who assumes to conjecture what the public wants must stand by its decision as to what it really does want, and must take the consequences. If time and money are ventured, the adventurer must stand the loss, if any arises. If the burden is doubled on the toiler's back, when he hoped it was to be removed, he must shoulder it and trudge on. This contingency women generally do not seem willing to face. Such caution and conservatism is a sound and wholesome corrective of a dangerous tendency if by risk is merely meant the gambler's chance, and by responsibility, the gambler's nerve. But risk and responsibility, backed by power,—by actual productive or inventive force,—are elements of life and health in a community. To justify the incurring of risk, the assuming of responsibility, there must be an original endowment of force, adequate training to insure proper control and direction of it, and a clear field for its exercise. The "captain of industry" to whom we trust our money must have natural business talent, some experience, and command of men and resources to carry out his plans. The physician to whom we trust our lives must have an inborn gift for his profession, thorough training, and he must be allowed the authority necessary to effect obedience to his orders.

Opportunity for adequate training of the powers, and for their exercise when trained, is no longer denied to women; on these points, it is plain, they need no longer hesitate to take up freely the work that is offered them. But after these two conditions are met, is there still room for doubt as to the third—the original endowment of power? Doubt on this point is, perhaps, natural. While psychic power has always, to a greater or less degree, controlled and guided physical power, the degree of that control has varied at different times. In a former age strong minds had to be yoked to strong bodies to secure the carrying out of their will. Of what use, then, to exercise the inventive faculties when there was no possibility of bringing their constructions to concrete

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life? When man had to fight nature with her own weapons —brute strength and ferocity, what could the weaker sex do but hide in ambush and watch the contest, in submission and obedience to strong protectors, merely to preserve existence? The habits, formed through long ages, of dominance of the physical cannot be shaken off in a moment. But to-day the forces of nature already subdued to human will are so mighty that differences in human power of body are reduced to insignificance. This is certainly true in the industrial realm, where the hard work is done by limbs of iron and nerves of electricity—powers at the command of the weakest body if there is mind enough within it to turn them to its uses. And even warfare has become a game of inventions, in which bodily power plays a very subordinate part.

It is the mental force of the human being that determines his weight as a factor in the world's life to-day; and it has yet to be shown that women are, by nature and original constitution, forever incapable of exerting this force to any great extent.

The inertia of human nature is such that we need not expect any powerful development of a quality until occasion urges it forth. Men have had to be inventive or die; in the early days of the race, women had to be inventive; and to their efforts may be ascribed, if we may trust certain eminent archæologists, those first domestic implements and appliances which meant so much as a step in civilization.

At the present day society is coming to depend more and more, not merely for luxury, but for bare life, on the marshaling of matter by mind, and for this service calls into play more and more urgently the mental powers of its members. When the need becomes so great that women, as well as men, must bring to the common service all the ingenuity and inventiveness they can muster, it is by no means improbable that women, as well as men, will manifest those qualities in no uncertain degree.

KATE HOLLADAY CLAGHORN

LEONIA, N. J.

III

THE GRADING AND PROMOTING OF PUPILS

There is no question of school organization at present more important than that of a proper adjustment of conditions to the needs of individual pupils. The assumption upon which most courses of study seem to be based, that just so much ground must be gone over with equal thoroughness by all pupils in the same time, is the greatest bane of our public-school system. The courses in use are probably intended to meet the needs and capacity of pupils of average ability. Such, however, is the difference of ability between the brightest third and the dullest third of almost every class of pupils that the work thus required is enfeebling to one part while it is discouraging or unduly excessive to the other. To neither group is there the stimulus of success with effort. To one group there is success without effort; to the other there is effort without success. The difficulty, it is feared, is enhanced by the want of ability or inclination on the part of many teachers to adapt each lesson's requirements to the capacity of individual members of the class.

There are some signs of reaction against a system which encourages or permits a dead uniformity of ability and effort. The only fear is that the opposite extreme of individualism will be sought as a remedy. As between the practice by which forty or fifty pupils of all degrees of ability are required to do the same work with nearly equal efficiency, and a return to individual teaching such as was carried on in ungraded schools forty years ago, there is but little choice, although the ill effects of the two practices must be felt in widely different ways. But a choice between these extremes of practice ought not to be necessary. No more useful service can be rendered the public schools than that of devising ways by which the benefits of a class-system of teaching will be secured, and, at the same time, such an adjustment of work

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be made as will permit pupils of varied abilities to do the most for themselves. To this task many educators have given much time and effort of late. Out of all the plans that have been devised there should be found some which can be readily adapted to any conditions that are likely to exist. It is evident that no one scheme will do for all. A classification which can be made in large schools should not be made in small ones, and a system of promotion that is feasible in small ungraded schools would be wholly inoperative in large graded ones.

In response to letters of inquiry to prominent school superintendents throughout the country, concerning plans of classification and promotion, over eighty replies have been received, from which the following facts and conclusions are gathered:

The written examination as the sole means of ascertaining the pupils' fitness for promotion seems to be passing away. Out of the entire number of places reported there are but seven in which entrance to the high school is determined solely by examination, and only two in which promotions from grade to grade, in grammar schools, are so determined. It is pleasant also to record the fact that in only four cities is the determining element for admission to the high school the superintendent's examination alone. The teachers' judgment, alone, generally determines the class in which pupils of the primary schools are placed. Promotions from grade to grade, in the grammar schools of about two-thirds of the places reported, are based upon the combined judgment of the class teacher and that of the superintendent or principal. In a few instances the examination by the superintendent or principal is made the determining element in all doubtful cases only, or cases in which the teacher is not able to decide.

The intervals between classes or grades, in about two-thirds of the cities and towns reporting, are one year. In the other third the intervals are one half year or less. In the report of the Commissioner of Education, for 1890-91, returns from 465 cities and towns of over 4000 inhabitants, show the proportion of short intervals to be much greater

than this. Several places report shorter intervals for the primary schools than for the grammar schools.

The methods of promotion will first be considered, of those places in which the intervals between the classes are one year.

In about one-half of the cities and towns reporting, special provision is made for individual promotions, or promotions out of course. Where no such provision is made there are reported either few individual promotions or none at all. Quite a number of superintendents report that the matter is left with teachers, with the request that pupils be promoted whenever they are qualified; but, in such cases, there is either no report of the number of individual promotions, or else the number of such promotions is so small they may be said to be rare exceptions. A few superintendents seem opposed to double promotions, on the ground that some portion of the course is either done slightingly, or else entirely omitted, or, as one superintendent says, "Good pupils are spoiled by being advanced beyond their depth merely because they are bright."

Where special provision is made for advancing pupils out of course, the widest difference of practice and of results is reported. In some cases the teachers are asked to report all pupils who, by superior scholarship, or by maturity, are deserving of promotion out of course. A list of such pupils is kept by the principal or superintendent, and special facilities are afforded those who desire to be advanced. A few superintendents cause each grade to be divided into two sections, —according to scholarship,—thus enabling pupils to pass more easily from one grade to another during the year. In the primary schools the pupils of a single class or grade are sometimes divided into three sections or groups in the same way. In one city, where the latter plan is followed, a modified form of the monitorial system is followed, in which pupils from the highest grades often hear pupils of the lower grades in reading, either individually or in groups of two or three.

The group-system of classification is carried out still far-

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ther in a few towns, as in Leominster, Mass., whose superintendent reports as follows: " In the lowest grades we divide pupils into four or five groups, higher grades into three, and, sometimes, possibly, only two. Pupils pass readily from one group to the next higher without the so-called 'jump,' whereby a certain amount of work is always lost. Pupils in the most advanced group in a room are doing about the same work as pupils in the lowest division or group of the next higher room. This enables pupils to go readily from one group to another, and, at the same time, also from one room to another."

Several cities and a few towns report the opening of an ungraded school in each of the large graded-school buildings. In this school are placed backward pupils, or pupils who cannot be readily classified in existing classes. Here, too, are pupils who are trying to get into a higher grade. The superintendents, in their letters and reports, speak in unqualified terms of the great good accomplished by the establishment of these ungraded schools. In some places the same end is reached by one or more assistants going from school to school in a building, to assist backward pupils, or pupils who are trying to get into an advanced division.

A number of superintendents, whose schools have the one-year interval between the classes, report a plan of dividing the classes into small sections in two or three essential subjects, and of permitting pupils who do especially well in those subjects to be pushed forward. Elizabeth, N. J., is a conspicuous example of this kind of classification. Here a class or grade of pupils is divided into three or four divisions in each of the most important subjects,—as arithmetic and grammar, —the divisions going forward as rapidly as they are able to, and continuing their pace even after the grade promotions are made. " Thoroughness in essentials " is made the motto. Individual promotions are made generally at the end of each month, but it is understood that any pupil may be advanced as soon as he shows that he can do more for himself in another division. A complete record of every pupil is kept, which shows the exact amount and character of the work

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done, the pupil's characteristics, etc. This is a kind of life-book, such as is made in the French schools, and is passed on from teacher to teacher as the pupil advances. Last year's statistics show that twenty-three per cent. of the pupils earned irregular promotions, and that sixty per cent. of them were reclassified during the year, and placed where they could do better work.[1]

Of other plans followed in schools having one-year intervals between the classes, a few will be given somewhat in detail.

The plan pursued in Cambridge, Mass., deals only with the grammar-school course, which is supposed to cover six years' time of pupils of average ability. A few weeks after the pupils enter the grammar school in September, they are separated into two divisions, according to ability—one division called Grade A, and the other division called Fourth Grade. The pupils of grade A move forward with the aim of completing the prescribed grammar-school course in four years, succeeding grades being called B, C, and D. The pupils of the fourth grade go forward more slowly, aiming to do, each year, only one-sixth of the work prescribed for the grammar school. The grades of these pupils, in succeeding years, are known as fifth, sixth, seventh, eighth, and ninth. At the beginning of the second year the pupils of what was grade A, now called grade B, go into a room with pupils of the sixth grade. During ing the first part of the year the pupils of the sixth grade are in advance of the pupils of grade B; but, owing to the superior ability of the latter division, they all come together during the latter part of the year. At the beginning of the third year precisely the same conditions exist as existed at the beginning of the first year. The pupils of grade C recite with the pupils of the seventh grade for a few weeks, when a readjustment is made—the abler pupils moving on at a pace sufficiently rapid to finish the course in two years, leaving the others to finish it in three years.

The fifth-grade pupils are alone in a room under one

[1] The details of this plan were published in the *Atlantic Monthly* for June, 1897.

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teacher during an entire year. The same is true of the eighth-grade pupils. In all other rooms there are two grades or divisions, one belonging to the four-years' course and the other to the six-years' course.

A pupil who begins with the fourth grade, and remains in the slower division to the end of the course, will graduate in six years, unless he has to repeat. A pupil who begins with grade A, and remains in the more rapid division to the end of the course, will graduate in four years. A pupil at the end of the sixth grade, or of grade B, may go on with a division which will permit him to complete the course in five years. Thus it will be seen that the entire course of study may be finished in four, five, or six years, depending upon the strength or ability of the pupils, and all without the omission or repetition of any part of the course.

All promotions, both from the grammar to the high school, and from grade to grade, are made by the class teachers, under the direction of the principal and superintendent. No pre-announced examinations are given, but there are frequent written reviews given by the teacher, the results of which help to determine the fitness of pupils to go forward. One feature of the plan which has helped it to succeed is that of the employment of a special teacher in each building, whose business it is to assist pupils who are behind in their classes in any studies, or who are trying to get into an advanced class. This assistance, however, is no essential part of the plan. It may properly be used with advantage in carrying out any plan.

Of the 467 grammar-school graduates in the year 1896, 8 per cent. completed the course in four years, 33 per cent. in five years, 49 per cent. in six years, and 10 per cent. in seven or more years.

One good evidence of the benefits gained by the plan is the kind of work which is done by the pupils after leaving the grammar school. The following table, furnished by Superintendent Cogswell, shows how the pupils who completed the grammar-school course in four years and in five years sustained themselves during the first year in the high schools,

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the results being compared with those of pupils who were six years in the grammar schools:

RECORD OF THREE DIFFERENT CLASSES—FIRST YEAR IN HIGH SCHOOLS

	AVERAGE PER CENTS. IN HIGH SCHOOLS		
	Four years in grammar schools	*Five years in grammar schools*	*Six years in grammar schools*
In the Latin School			
Class of 1897	79.3	72.8	66.9
Class of 1896	80.4	77.0	71.6
Class of 1895	78.7	78.9	76.4
Average for 3 years	79.4	76.2	71.6
	21.5 per cent of whole number.	39.8 per cent. of whole number.	38.7 per cent. of whole number.
In the English High, General Course			
Class of 1897	79.7	78.7	72.2
Class of 1896	85.9	75.1	76.4
Class of 1895	77.3	76.2	73.4
Average for 3 years	80.9	76.6	74.0
	13.8 per cent. of whole number.	43.1 per cent. of whole number.	43.1 per cent. of whole number.
In the English High, Commercial Course			
Class of 1897	76.3	69.0	69.3
Class of 1896	74.8	70.9	68.4
Class of 1895	73.7	73.5	69.8
Average for 3 years	74.9	71.1	69.1
	12.1 per cent. of whole number.	38.4 per cent. of whole number.	49.5 per cent. of whole number.
In the Manual-Training Course			
Class of 1897	78.6	67.2	61.7
Class of 1896	79.2	63.5	65.2
Class of 1895	72.6	65.4	65.9
Average for 3 years	76.8	65.3	64.2
	9.9 per cent. of whole number.	39.5 per cent. of whole number.	50.6 per cent. of whole number.

To the criticism that this plan of classification can be used only in large systems of schools, or in large buildings, it may be said that, in one of the Cambridge grammar schools where the plan is in full and successful operation, there are only 330 pupils, distributed in six rooms.

This plan is also successfully followed in Middleboro, Mass., whose entire enrollment of pupils last year was 1112. Of this number there were promoted 35 pupils out of course, and about 15 out of 50 pupils of the present graduating class will have completed the course in one year less than the prescribed time.

In Woburn, Mass., a plan of "double promotions" has been in operation for some years and has been attended with

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good results. In the primary schools the interval between classes is made short by dividing the pupils into small sections. As there are three or more sections in each room the class intervals are so short as to permit frequent changes, the section rather than the grade being the unit of promotion. The nominal time for the completion of the primary-school course is three years; but many complete it in much less time. In each of the grammar grades the essential features of the entire work prescribed for the year in language and arithmetic are taken during the first half year, and those pupils who have most successfully performed the work are promoted, at the end of the half year, to the next higher grade. During the second half year a more minute study of the topics in language and arithmetic already pursued is made, by which an opportunity is afforded for new pupils to do the work of the grade, and for those who have done it imperfectly, to review it. By this plan bright pupils are given the opportunity of passing through two grades in one year. The number of pupils who won mid-year promotions last year in the grammar grades was 129, 104 of whom received a second promotion at the end of the year. The number of mid-year promotions in 1895, in the same grades, was 215. Of this number all but 78 were again promoted at the end of the year.

Some possible objections to the plan are met by Superintendent Emerson, who says: "The conditions of promotion in every case are punctual and constant attendance, high rank, good conduct, good health, and the consent of parents"; and, again, "This special adjustment of the work in language and arithmetic is necessary on account of the nature of these subjects; each principle being so related to those that precede it that the pupil is obliged to carry in his mind a general outline of the entire subject. This is not true of the other branches of study, such as geography, history, spelling, etc. It is of little moment which hemisphere is studied first, which continent shall have the precedence, or in what order the countries of a given continent are studied."

In Keene, N. H., a plan has been in operation for three

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years which embodies some features of plans already described. Its resemblance to the Cambridge plan consists in the division of the fifth and eighth grades into A and B sections, one of which goes forward at a more rapid pace than the other, with opportunity for pupils to cover a six-years' course in four or five years. Its plan of reviews, at stated times, for the convenience of those who omit some portions of the work, as well as for those who need more drill in the subjects reviewed, resembles, in some respects, one of the essential features of the Woburn plan. In the Keene plan, the A, or advancing divisions, do not work ahead in all subjects, but only in those subjects in which consecutive work is necessary, as grammar and arithmetic—thereby resembling, in one important respect, the plan followed in Elizabeth, N. J. There are other features of the Keene plan which are unique, and show the value of skillful planning and careful oversight. There are ten grades below the high school. Of 1056 pupils enrolled 48 special promotions were made during the year. In the present graduating class of 64 in the grammar school, 14 will have completed the course in nine years, 4 in eight years, and 1 in seven years.

The reports of plans of promotions in schools having short intervals between classes are almost as varied as those already referred to. In nearly all of these schools the reported number of double promotions during the past year far exceeds the number reported from schools where class intervals are one year in length; the percentage of such promotions, based upon the number of pupils enrolled, ranging from three to thirty per cent. In a majority of this class of schools there are twenty-week intervals between the classes, regular promotions being made twice a year. When two sections, twenty weeks apart, recite in one room to the same teacher, transfers from the lower to the higher division are said to be comparatively easy to make. Sometimes the classes, especially when they are large, are separated into two or more divisions, making the intervals between the divisions only ten or twelve weeks. This arrangement is not unlike that which is made in several cities and towns, by which all the

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pupils are divided into small sections, according to attainments, with provision for promotion at the end of eight, ten, or twelve weeks. There are some differences in the details of plans followed; but, in general, the principle recognized is the same, which is to make as short intervals between the classes as possible, with frequent promotions. This principle was applied in the classification of the elementary schools of St. Louis, twenty-five years ago, under the direction of Dr. Harris, now Commissioner of Education.[2]

Of the cities in this country which have adopted this plan, in whole or in part, Dayton, O., may be mentioned as a conspicuous example. Of the plan in Dayton, Superintendent White writes: "The aim is to have from thirty to thirty-five pupils in each room. The work is assigned for the year by grades. The pupils of each grade are assigned to rooms as before stated, commencing with the one having the highest standing, and so on, down to the end. In districts where there are several rooms of the same grade it makes classification very close, and enables the teacher to present the work to each class in such a manner as to be within the comprehension of each individual child. Each of these rooms is again divided into two classes, according to standing, and the work is presented to the two groups separately. When the work for the ensuing year is completed, the pupils of any group, or any particular pupil in the group may be advanced to the next higher grade at any time within the year.

"We are trying to preserve the class organization and retain the benefits of class instruction at the same time that we are utilizing the individual instruction of pupils.

"Our teachers, principals, patrons, pupils, and board of education take kindly to the new arrangement, and the work of the schools is perhaps more harmonious than it has ever been in its history. This arrangement takes closer and more methodical supervision, and a great deal of patient, skillful work on the part of those in authority, but we anticipate for it very gratifying results."

It is asserted by some that this plan is only adapted to the

[2] See Annual Report of the St. Louis Public Schools, for 1871–72, p. 81–82.

schools of large cities or to schools of large size. Two cities of small size report that they are following the plan essentially with success—Le Mars, Ia., and Centralia, Ill. Of the work in Le Mars Superintendent Coleman writes: "Our class intervals are short. In the primaries they are from six to eight weeks, in the grammar grades from eight to twelve. At intervals, varying somewhat, each class is reviewed back to the next lower class; but all pupils *very* strong in the work, as indicated by the recommendation of the teacher, are excused from said review, and are promoted to the class that reviews to meet them. Our rate of progress between these reviews is determined largely by the ability of the stronger members of the class, as we expect the others to review soon. This is our sixth year on this plan, and we find an increasingly large number of pupils ready for the promotions.

"We have admitted three classes into our high schools this year—one in September, one the first of November, and one in December. There are 49 pupils in these three classes, and 5 of them took ten years to complete their preparation for the high school, 5 took nine years, 8 took eight years; 13 took seven years, 15 took six years, 2 took five years, and 1 took four years."

In the Centralia schools 425 pupils of 1374 enrolled were promoted out of course last year, or over thirty per cent. Of the plan pursued Superintendent Mather says:

"Our system of promotion has to do largely with the individual pupil. Each grade is divided into A and B sections. No grade in the system is more than six weeks, or seven, beyond the next lower. When a pupil, in the judgment of the teachers, is able to do the work of the grade beyond, he is promoted to it. With my strong teachers—those of good judgment—I permit the recommendation to take the place of an examination. Every month, and many times every week, pupils are promoted. By keeping the grades thus far apart the school is not disorganized, and sufficient encouragement is given to all pupils."

Thus far I have given, somewhat in detail, the plans of

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grading and promotion—culled from letters and reports—which are in actual operation in this country. They express in forcible terms the feeling of opposition quite generally felt in progressive centers to the lock-step marching by platoons from grade to grade, which still characterizes the practice of grading and promotions in many schools of both hemispheres.

In all the examples given there is, doubtless, much that is good. It is evident, owing to varied circumstances, that no one plan is suited to all places: and yet it is possible to select certain common elements of excellence, and, from them, derive some principles of value to all who are seeking to solve the difficult problem of making such grading and promotions as will give individual pupils the largest measure of opportunity. To these principles I will add some conclusions of my own, based upon experience and observation, and upon opinions from trustworthy sources.

1. As to the length of intervals between classes: it is significant that, although in my recent inquiry only about one-third of the places reported shorter intervals than one year, and, in the investigation made by Commissioner Harris in 1893, the proportion of places having short intervals was but a little greater, the opinions of superintendents, as shown in the latter investigation, very generally favored the shorter interval; only 65 out of 485 reporting being in favor of the one-year interval. I place, therefore, first among the principles of grading, the making of as short intervals between the classes as circumstances will permit. In a collection of pupils numbering one hundred or more, the gradation should be of such a kind as to permit intervals of one-half year or less in at least two branches of study, and, where the number of pupils is more than two hundred, such intervals may profitably exist in nearly all the required studies. Where the numbers warrant it, as in buildings having four hundred or more pupils, the intervals should be nine or ten weeks in all subjects, and may be less than that in some subjects. Where the number of pupils covering the entire course must be placed under the

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charge of two teachers, their distribution will depend upon circumstances, such as the relative number of advanced pupils, number of beginners, etc. But generally it may be said that a little more than half of the work usually assigned to the course should be given to the primary teacher, and the rest to the grammar-school teacher. An arrangement of classes in both rooms should be made, by which the intervals are less than one year between classes in sequential subjects—like reading and number in the lower grades and arithmetic and grammar in the upper grades. With such classification pupils should be permitted to recite in an advanced division in any one or two subjects, whenever they show ability to do the work of that division, with a view of working up into a higher grade in all subjects.

Where the work of one teacher must cover the entire course, close gradation in all subjects should be avoided. The pupils may be heard all together, or in two divisions, in such subjects as writing, drawing, nature-study, and language. In other subjects the school should be divided into four or more divisions. Pupils should be permitted to recite in any division or any subject in which they can do the most for themselves, and be permitted to pass from one division to another whenever they show that it is for their advantage to do so. The more advanced divisions in some subjects may be heard two or three times a week, with correspondingly long lessons assigned if they are full-time subjects. The number of daily recitations in rural schools will depend upon circumstances, but should not exceed twenty.

2. Regular times of grade or class promotions are desirable, with special arrangements for the promotion of individual pupils, or of sections of pupils, whenever they show their ability to perform the work of a subsequent grade. A specific plan for irregular, as well as for regular, promotions should be made and carried out by the principal or superintendent. As a rule, merely general directions or a reliance upon the judgment of the teachers to promote pupils out of course are not sufficient to meet the requirements of all cases.

3. " Double promotions," where the intervals between the

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classes are one year or more, and where there is no arrangement by which the work in sequential subjects of all grades is covered, may be a benefit to some pupils in the saving of time, but are likely to be attended with dangers that do not offset the benefits gained. If the course of studies is what it should be there is a loss in "skipping" a portion of the work which cannot be made up easily.

4. Pupils should not be heard in recitation together in all subjects, but should be separated into two or more divisions, one division of pupils being given an opportunity for study while others are reciting. In some exercises, all the pupils of a grade may recite together—as in penmanship, and some kinds of language and nature-study, in the lower grades, and in some forms of written and oral reviews in the upper grades. In some subjects,—like arithmetic and grammar,—at least three divisions of a class may with profit be made. In large buildings the divisions may be distributed in the rooms on the basis of those subjects in which the shorter interval is made; that is, two or three divisions in arithmetic, constituting one class or grade, may be placed together in one room.

5. Promotions from grade to grade should not depend wholly upon examinations made by a person other than the class teacher. In general, the class teacher should determine the promotion or non-promotion of all pupils whose ability or non-ability to perform the work of the subsequent grade is unquestioned by her. The place of all other pupils should be determined by the principal or superintendent, by means of examinations and such other evidence of their ability and needs as is attainable.

6. Provisions should be made in the course of studies for reviews at such times and in such subjects as will permit rapidly advancing pupils to lose no part of the work outlined in the course.

7. Wherever it can be done, the help of one or more assistant teachers should be secured, whose special work will be to give assistance to backward pupils, or to pupils who are endeavoring to work up into a higher division or grade.

8. For the purpose of knowing the characteristics and

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needs of individual pupils, a teacher should be in charge of the same class of pupils for at least one year. In some cases, where pupils are promoted out of course from one room to another, the time of such pupils with one teacher might be less than a year.

9. Although the number of pupils to a teacher has not been a special object of inquiry in this investigation, it has been brought out incidentally that attention to the needs of individual pupils demands that in no case should there be more than forty pupils to a teacher, and that where the ages and attainments of pupils are widely different, as in so-called ungraded schools, no teacher should have more than twenty-five pupils.

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IV

THE SCHOOL-FATIGUE QUESTION IN GERMANY

In Germany to-day child-study as such is scarcely known, and professors at the universities have no interest in the study of education. I have asked many people here what was being done at present in education, and they have almost unanimously answered, "Next to nothing is being done; Germany is resting on her laurels." But, after further questioning about the study of children's drawings, learning of language, hygiene of writing, school fatigue, children's games and plays, religious life, etc., I find that these questions are busying others than the professors of education and the official leaders in educational administration. Much valuable new work is now under way in all the different lines of child-study; but the various workers have never come together in any recognition of the unity of their work from the standpoint of the teacher. Professors of psychiatry, of physiology, of psychology, specialists in children's diseases, and many others—members particularly of the medical faculty in the universities, some school directors, heads of hospitals and institutions for the feeble-minded, some school-teachers who have taken up an educational problem as outside work—these are the men in Germany to-day from whom to learn new ideas in education. Director Ufer proposes next spring to try to bring all such workers together into a German child-study association that will, it is hoped, unite the various interests.

One of these departments of child-study that seems to me to offer most important new ideas for us in America is that of school fatigue. In Germany no one has faced the real problem more directly than Emil Kraepelin, professor of psychiatry at Heidelberg. Much has been done already, but

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the work of Professor Griesbach, coupled with the clear insight of Professor Kraepelin into the nature of the problem of mental work, together give the greatest flood of new light that I have yet found. Kraepelin's chief labors during the last ten years have been directed to the problem of mental work, its conditions, individual differences, the influence of drugs on mental activity, and the hygiene of work. In this paper I shall summarize the most important points in his latest treatise on school fatigue.[1]

Many have advised variety in the school exercises as a preventive of fatigue. "Change is recreation," says Richter (Jena). But, on the other hand, we know that actual fatigue spreads gradually over our whole frame, and when we are tired out for one thing we are tired out for other things as well; so that rest, with, perhaps, sleep too, becomes necessary before we can recover our buoyancy and enter on new work. Change of employment is not recreation; for all work fatigues, and continuance at any work increases fatigue. It is true, to be sure, particularly in muscular work, that a change of employment may release overworked muscles so that they may rest while other muscles are brought into activity. This is also true, although to much less extent, of mental work. But it is the release of the tired muscle from work that rests it, not the activity of the other muscles.

This leads to the most important point in the discussion, viz.: the distinction between fatigue (*Ermüdung*) and weariness (*Müdigkeit*). Fatigue results from the loss of the energy at our disposal; its amount is measured by the reduction in our power to work. The feeling of weariness, on the other hand, may result from the monotony of routine without at all being accompanied by any material loss of energy. A child at play may become fatigued, but never weary of his activity; a boy engaged at work in which he takes no interest may become so weary in fifteen minutes that he can accomplish nothing. One of Kraepelin's colleagues has shown that the fatigue effects are measured, not by the tediousness of the work, but only by the actual work performed. Tedi-

[1] *Zur Ueberbürdungsfrage.* Jena: Gustav Fischer, 1897.

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ousness produces the feeling of weariness (*Müdigkeit*) which is distinctly different from the fatigue itself (*Ermüdung*).

Change of work in school is, nevertheless, undoubtedly advantageous. In the first place the interruptions give a rest for recreation; secondly—and this is the most important reason—the school subjects do not all require an equal effort of attention and an equal expenditure of energy. After a difficult lesson an easy lesson will afford an opportunity for a partial recovery from the fatigue previously produced. The change of work, therefore, must not be merely a change of subject, or even a change of occupation, but a change in the difficulty of the task. Easy and difficult must alternate. Thirdly, we may obtain refreshment by change of work, on account of the fresher mood with which we turn to new work. Of course this change must not be too frequent or sudden; in that case it becomes an unpleasant disturbance, owing to the difficulty we feel in going from one mood to another. In order to work well we must gain the necessary absorption in the subject-matter, our feelings must harmonize, and our thoughts be directed toward the object. In this way we become "warmed up" to a subject, and this warmth is all lost when we go over to an entirely different subject.

Toward the close of a difficult piece of work we feel the pleasure of accomplishment (*Schlussantrieb*), which is naturally a very important factor educationally. It results in an increase in the amount of work performed, and it is similar in its effect to the voluntary effort with which we enter on a new piece of work. Neither of these factors, however, is sufficient to cover up the traces of fatigue, still less to counteract fatigue. Enthusiasm for a subject and interest in a particular piece of work may, nevertheless, become so great as to prevent us from noticing the warning sign of fatigue, viz.: weariness. When this happens, "we do not know when we are tired," and hence may continue to expend our energy improvidently till exhaustion follows. Real fatigue, in such case, continues to increase without our knowing it, and in spite of the feeling of freshness, but later becomes all the more imperative in its demands for rest; or, if not, then the

danger of long continued restlessness may increase and sleeplessness follow with inability to rest, ending, finally, in prostration. The recreation resulting from a change of work is, therefore, by no means to be regarded as a relief from fatigue, but only as a relief from the feeling of weariness.

It is often urged, as an objection to the reliability of the attempts to measure school fatigue, that the tests require monotonous tasks to be performed,—adding, copying, writing Greek paradigms, etc.,—resulting, therefore, in much greater fatigue than the more interesting and varied exercises of an ordinary school day. Kraepelin's investigations, however, have shown that, although with adults the traces of tediousness and ennui are clearly seen in the results of the experiment, yet this does not carry with it any material decrease of the working energy. This latter varies essentially, or perhaps entirely, with the relation between work and rest. Of course it is possible that children may lose more energy through the tediousness and monotony of the work than do adults.

Fatigue is really nothing but the necessary and inseparable effect of work. It begins to show itself just as soon as the work begins; for it is merely the outward sign of the expenditure of energy, and therefore of the reduction in working power. Ordinarily, it is true, the beginning of fatigue is concealed by the counteracting effects of practice. When, however, the experiment is made with well-practiced work, the greatest amount of work is found to be done at the very start, followed by a continuous fall in the curve of work. Practice makes easier, and undoubtedly reduces the attendant fatigue; so that, as Kraepelin says, the only correct way to overcome fatigue is to drill one's self in the work that is to be done. In order to do this we must accustom ourselves to continue at work even after we become fatigued. Hence, too, in school our pupils must learn to work even after they begin to get tired, in order that they may gain the advantages of practice and may be able to continue their efforts even under fatigue, as, indeed, the conditions of life force us all to do. In fact, in order to avoid fatigue entirely, we should have to stop every

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activity and die; for even barely being awake without working at all would inevitably lead to fatigue. Here, as everywhere, all depends on the amount. Too much fatigue may be disastrous, too little makes effeminate; hence we must find some standard of measure.

Laboratory experiments, as well as the experience of daily life, show that fatigue reduces the practice value of any piece of work, *c. g.*, in acquiring a manual dexterity or in memorizing. In learning any new thing the fuller and fresher our energy, the greater will be the practice effect. Repetition reduces the former, and, therefore, the latter also. If we continue the work beyond a certain limit the practice effect vanishes and no good result follows. It becomes necessary, therefore, to determine this limit, beyond which it does not pay to strain our energy, and when, accordingly, a period of rest is true economy of time. For this purpose the chief school studies would have to be tested separately, since some require a longer period than others for recuperation. Then, too, the pupils differ greatly in their recuperative power. Both of these varying factors would have to be measured before a truly hygienic roster could be made that would suit the varying difficulty of the school subjects, and the age and the ability of the pupils.

More important still than any question of mere expedience in securing school results, is the further uncertainty how much lasting injury may result to the health of the school children by the present arrangement of school programmes. Do the periods for recreation afford the opportunity for the children to recover their full buoyancy and freshness, or are they forced to begin a new day's work before they have recovered from the fatigue of the previous day? If the latter is the case, then the fatigue will leave lasting effects in the growing organism and arrest development. To determine how far this is true we must test the power of work and the fatigue of the same pupils on successive days, at the beginning and end of the week, before and after the vacation, etc.

In the last few years the idea has been gaining ground

everywhere that the question of school fatigue can be settled only by way of experimental investigation. Already considerable work in this direction has been done. Laser, in Königsberg, and Burgenstein, in Vienna, found but little diminution in the working power of children, thirteen to fourteen years of age, even after three hours of school work. Here the influence of practice more than counterbalanced the fatigue effects. But the remarkable fact was brought out that the abler pupils accomplished more than double, and, in single instances, fourfold as much work as the slower ones. The individual differences in power of enduring fatigue are also enormous. Richter, in Jena, tells us that some of his pupils were weary within a very short time after they commenced to work, while others kept on working, feeling almost as fresh as at the start.

Schulze, in Leipzig, found that when his pupils continued their work in arithmetic during two periods, they accomplished more in the second hour than in the first; so that, there at least, change of occupation would not be economy.

Kemsies tested school children in Berlin with the ergograph, and found distinct reduction of muscle power corresponding to mental fatigue. Mathematics and gymnastics produced the greatest loss, while history, geography, and natural science served to recuperate. Singing and drawing were particularly tiring to those that worked well. The most remarkable result, however, was that, in single instances the ergograph curves show distinctly the existence of lasting fatigue that continued for several days at a time before full recovery.

Ebbinghaus, in Breslau, has recently tried a new method of testing fatigue, whereby, as he believes, a nearer approach is made to measuring the mental power than by the adding method, or any of the other more mechanical and monotonous tests. His combination method, as it is termed, makes use of extracts from the reading book, in which, however, single syllables and words are omitted. The pupils are to fill in the omitted parts as rapidly as possible, so as *to make*

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sense. The number of mistakes is counted as inversely measuring the mental power.[2]

Griesbach, in Mühlhausen (Alsace), merits special attention as having applied a new and remarkable test for fatigue, viz.: the æsthesiometer (touch-dividers). He believes that the least perceptible opening of the points of the dividers is a reliable measure of the degree of fatigue. His results are as noteworthy in their consistency as the method is extraordinary. A large number of children were measured at the most different times, before and after each recitation period, as well as on holidays and during vacation. The test was taken on the forehead, cheek, ball of the thumb, end of the index finger, tip of the nose, and the underlip. All of these measures, differing as they did among themselves, agreed in showing the same variations under the influence of the school work. On holidays the variations were inconsiderable, while on school days the measures doubled, and some showed fourfold the normal least distance. The great reduction of skin sensibility occurred after mathematics and Latin, French and English; but, after the period in religion, the pupils seemed to have recovered.[3] During the midday recess the recuperation was very marked, but not complete. Even in the morning, before school began, a large number of pupils failed to show as great sensibility as on holidays. Griesbach concludes that many pupils have not sufficient rest to enable them to begin the day's work in a normal condition of freshness.

Griesbach examined the pupils of the industrial classes in the Oberrealschule, also apprentices in shops, learners in the spinning and weaving school, and factory hands. Variations in the sensibility were readily traced in all of these cases, but

[2] See *Psychological Review*, March, 1897.

[3] Wagner found the fatiguing effect of the different school subjects as follows: Mathematics=100; Latin=91; Greek 90; gymnastics=90; history=85; geography=85; arithmetic=82; French=82; German=82; natural science=80; drawing 77; religion=77. But, as the author remarks, the teacher's personality has more to do with the degree of fatigue at the end of the period than has the character of the subject taught. It is oftenest the best teachers and the best pupils who show the most fatigue, simply because they have done the most work.

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no such changes showed themselves as in the other pupils from the gymnasium. As a result of the manual work at the loom or in the machine shop, no reduction of sensibility was perceptible.

The same investigator tested some fifty pupils of different ages before and after oral and written examinations, as well as on holidays. Without exception he found a very considerable reduction in the sensibility after the mental exertion. The examiner, too, who had to follow the work with close attention, showed similar increase in the least perceptible distance.

Kraepelin claims that all the other methods thus far used fail to take account properly of the effects of practice during the test, and hence give an unreliable picture of the fatigue. But Griesbach's method is yet to be tested by comparison [4] with other directer methods before we can know exactly what relation really exists between skin sensibility and mental fatigue; but it avoids the interfering effects of practice, and therefore probably gives us the clearest general picture of the effects of fatigue. The method enables us, for the first time, to express in figures the individual differences among pupils as regards their power to resist fatigue; secondly, the differences of the several subjects of study in producing fatigue; thirdly, the very slight fatigue effects from the purely technical activities requiring no great muscular effort. Hence manual activity appears as a recreation, and this teaches us to recognize the deep meaning of mental work. It is the most exhausting of all work.

Griesbach and others have, moreover, shown that often the midday recess appears not to suffice for recuperation from the fatigue of the morning. We see from this the immense influence of the school work, since, on holidays, no perceptible diminution, but rather an increase in the skin sensibility, was noted at noon.

[4] Dr. Ludwig Wagner has recently applied Griesbach's method in a very detailed study of the pupils in the new gymnasium at Darmstadt, and has found confirmation of the above announced results. See his *Unterricht und Ermüdung*, Berlin, 1898.

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Both Griesbach and Kemsies have found considerable fatigue present even in the morning before school began, and remaining over from the effects of the work of the previous day. Some of the pupils tested (fourteen years old) had only six and one-half to seven hours' sleep. It is possible that some of those so reported are evening workers, whose sleep curve reaches its greatest depth later, toward morning, and whose power of work is smaller early in the morning, increasing during the forenoon. Römer has shown that such evening workers cannot well stand the loss of their morning sleep. Griesbach demands, emphatically: (1) No scientific work in the afternoons; (2) later beginning of school in the morning (never before eight); (3) abolishment, as far as possible, of school examinations; (4) reduction of home work, and especially less mechanical learning by heart.

The teacher, too, may be, and often is overworked. Perhaps this part of the question of school fatigue is no less earnest and important than that in regard to the pupils. The same tests should be applied to determine the teacher's fatigue as his pupils.

We must remember that the hundreds of thousands of patients in our insane hospitals were all school children once. How many of these came out of school weaker than they entered? We cannot avoid all the injurious influences of school work if the growing generation is to be brought up to work and inured to fatigue; but we need not lay upon the weaklings burdens too heavy for them to bear. All pupils would be strengthened in health by school work if it were properly adapted to them, and to make it so should be our constant aim.

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V

READING ALOUD IN THE PUBLIC SCHOOLS

It is universally conceded that the public schools fail to give children any power as readers. One authority states that, after the child's twelfth year, his ability as a reader steadily declines. (Up to that time he is gradually acquiring greater mastery over words, and so, in a sense, he may be said to be improving.) I can add my testimony that, by the time he reaches the university, the average student cannot read at all.

Many remedies have been suggested, from which I may select two as typical. One is to call the attention of the child to the mechanics of vocal expression—to inflection, force, movement, and so forth. The other (that commonly employed), to tell the child to get the thought. It cannot be denied that both methods have, in isolated cases, been productive of some good, yet, on the whole, they have been well-nigh barren of results. It might be interesting and profitable to dwell in detail upon the reasons for these failures; but, in the present article, I shall have to confine myself to the bare statement of what appear to be the facts.

The mechanical method fails, especially with younger people, because it is dry, technical, unstimulating, and, in the main, uninteresting. The "get-the-thought" method is a revolt against the other plan. Appreciating that drill in inflection, pitch, and so forth, has done nothing toward elevating the standard of reading, the conscientious principal or superintendent has told his teachers that they must see to it that the scholars get the thought. This is a step in the right direction, but it must be acknowledged that it doesn't produce results. Why? I believe there are two main reasons. First, for one cause or another the finer shades of meaning escape too many teachers. Second, very few teachers have received

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the training that would enable them to discern quickly with what mental conditions various forms of vocal expression are associated. In other words, they have not the criteria of vocal expression; and, in consequence, helpful criticism is impossible. I shall enlarge upon the subject of criteria later on, and so we may dismiss it for the present without elaboration.

Why have previous methods of teaching reading failed? I offer three reasons: First, the lack of appreciation of the best literature on the part of the teacher; second, the complexity of vocal expression; and third, the intangibility of vocal expression.

It is not within the scope of this article to dwell on the first of these reasons. One can safely assert, however, that thousands of children would be better readers if their teachers had more love and appreciation of real literature. Of what avail is it to put good literature into the school books if its merit does not appeal as well to the instructor as to the pupil? The stream can rise no higher than its source. I believe there are many hopeful signs of progress. There is a rapidly growing sentiment against the substitution of parsing, history, philology, or ethics for genuine literary training. We are coming to recognize that literature is art, beauty, spirit; and, when this recognition becomes general, we shall have better teachers and better readers. For there is nothing that so stimulates our vocal expression as the desire to impress upon others the beauty and feeling of what has impressed ourselves.

Complexity may be defined by illustration. A phrase may be read fast or slowly; in high or low key; with one melody or another; with loud or subdued force; with this quality of voice or with that. Now all these elements are present at one time, so that, without proper training, the teacher is unable to discriminate between them, and hence unable to give the needful correction, without which there can be no progress.

Intangibility may be explained by showing what is meant by a tangible subject. The spelling lesson is tangible; the arithmetic lesson is tangible. A mistake is easily recognized

and corrected. Three months after a paper in these subjects has been handed in the teacher can go back to it and examine it. But vocal expression is evanescent and, by the untrained, can be recalled imperfectly, if at all, and then only a short time after it has been heard.

In the presence of the combined difficulties due to complexity and intangibility the teacher is appalled; and, conscientious though he be, gives up in despair. The teaching becomes perfunctory; the children lose interest; and there is the end of reading. Reading, which should be the brightest and most inspiring of lessons, degenerates into a humdrum, dry-as-dust time-killer. Good reading is as rare as the classical bird. No idea of a pupil's ability can be gained from a knowledge of the class he is in. He is no better reader in the highest public-school grade than he is in the grade two or three below the highest. The teacher has come to recognize the futility of his efforts, and so, in many classrooms, the time set apart for reading is given up to language lessons, composition, and other studies, valuable in themselves, but only incidentally helpful in increasing the pupils' reading power. Dark as is this picture, it is none too black. I wish space permitted the citing of hundreds of instances that prove my contention, gathered from the schools, not of rural and backwoods districts, but from personal experience in the schools of New York, Brooklyn, Chicago, and other large cities; besides the evidence of between five and six thousand teachers from all over the United States and Canada. All I can state here is, let the unprejudiced observer examine for himself.

It may be asked, what objects are to be attained as a result of reading lessons? I think we can agree that there are two. One is, to give us the power to extract thought from the printed page. After we leave school our information is gained from books; and what we get from these is largely determined by our school training. Our system of education has a great deal to answer for when it fails to provide this training. I would not for a moment depreciate the value of vocal expression, but I consider of primary importance the

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ability to get the author's meaning. Our teaching, from the primary grade to the university, is lamentably weak in this direction. Said a well-known college professor to a public-school superintendent, in reply to the latter's inquiry, What shall be done better to prepare the secondary-school students for college classes? "For Heaven's sake, teach them how to read." Another college instructor—a learned authority on geology—tells me that he finds occasion to remark to his classes about once a month, "It's a great thing to be able to read a page of English." No one who examines the reading in our schools can fail to be struck, not so much with the absence of expressive power, as with the absence of mental grasp. We are so anxious to get on that we are content with skimming the surface, and do not take the time to get beneath it. The reading lesson should be, primarily, a thinking lesson, and every shade of thought should be carefully determined, no matter how long a time may be consumed. The habit of hurrying over the page, which is so prevalent, is clearly an outgrowth of schoolroom methods. Careless of all the future we are too prone to push the pupil along, ignoring the simplest and most apparent of psychological laws, that thought comes by thinking, and thinking takes time.

One is sick of the universal excuse for the laxity in our methods: We have not the time. To which I reply to teacher, superintendent, and school board, We have no time to teach a subject poorly. If thought-getting—genuine thought-getting—were insisted on from the outset, I am sure that the work which now requires six or seven years to accomplish could be done in five. How much thought power has the public-school graduate? Very little. And yet, if all lessons—history, geography, arithmetic, and the rest—were made thought lessons, a child of fourteen might be on the road to educating himself when he leaves school. Is it not pitiful when we see a bright boy or girl spending three or four hours a day in the preparation of his lessons, and then coming to class only to find he has wasted and worse than wasted his time? I would not seem altogether a pessimist, for I am convinced that there is, of late, great improvement

along the lines in question. But not everywhere. And so, in taking leave of this aspect of my theme, I would again urge the teacher to ponder these noble words of a noble man, "When thou readest, look steadfastly with the mind at the things the words symbolize. If there be question of mountains, let them loom before thee; if of the ocean, let its billows roll before thy eyes. This habit will give to thy voice even pliancy and meaning. The more sources of interest we have, the richer is our life. To hold any portion of truth in a vital way is better than to have its whole baggage stored merely in one's memory." And, again, "He who thinks for himself is rarely persuaded by another. Information and inspiration he gladly receives, but he forms his own judgment. Arguments and reasons which, to the thoughtful, sound like mockery, satisfy the superficial and ignorant." And there is no better way to develop such a thinking person than by careful training in reading.

> "Most readers, like good-natured cows,
> Keep browsing and forever browse;
> If a fair flower come in their way
> They take it too, nor ask, 'What, pray?'
> Like other fodder it is food,
> And for the stomach quite as good."

Training in thought-getting is, then, the first result to be expected from the reading lesson. The second is the power of adequate vocal expression. I shall resist the temptation to enlarge upon the many benefits to body, voice, mind, and soul, to say nothing of the practical, worldly benefits of vocal expression. I shall take it for granted that they are recognized, and pass on to the discussion of a plan that may help us to get these benefits; prefacing this discussion with the statement that the evil results of our present laxity are not to be laid at the door of the individual teacher, but at that of the educational system in general.

Granting that the teacher has the thought of the reading lesson,—and this is a *sine qua non*,—what else is necessary to make him a good teacher of reading? First, he must have a

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thorough knowledge of how thought and feeling get themselves expressed. In other words, he must have the criteria of expression. Second, he must have a definite graded method of instruction, in which the simple shall precede the complex, and in which one element, and one only, shall be presented at a time.

I have nothing to say in this article on the subject of elementary reading, but I cannot refrain from expressing briefly my opinions on this important feature of education: First, I would agree that the phrase and sentence method is the best for beginners. Second, that the primers so generally used are unscientific and stultifying. The "I see a cat on the mat" sentence is unworthy the attention of a sensible child. As far as possible I would have the child read sentences that he himself coins in the course of his daily life. These may be written on the board, or, better still, printed for him, as is now so often done, by the school press.[1] Third, and this point I would urge strongly, never let a child read aloud a single sentence until he has the thought. This should be insisted on from the outset. The teacher should in every way impress upon the class that word recognition is not the end but the means. This insistence makes the work a little slower at the start, but the final results justify the claim that this is the only true educational theory.

The criteria of vocal expression are four: time, pitch, quality, and force. It is impossible to discuss here these elements with any degree of fullness,[2] but I trust to make clear their meaning and importance.

Time refers to the rate of vocal movement. It may be fast or medium or slow, according to the amount of what may be called the collateral thinking accompanying the reading of any given passage. To put it another way: A phrase is read slowly because it means much; because the thought is large, sublime, deep, extensive. The collateral thinking

[1] A very good printing outfit may be obtained for less than twenty-five dollars.

[2] For an exhaustive treatment, see *The principles of vocal expression and literary interpretation*, by Chamberlain and Clark. Chicago: Scott, Foresman & Co.

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may be revealed by an *expansive* paraphrase. For instance, in the lines,

> "Not a drum was heard, not a funeral note,
> As his corse to the ramparts we hurried,"

why do we read slowly? The paraphrase answers the question. "It was midnight. There lay our beloved leader, who should have been borne in triumphal procession to his last resting place. Bells should have tolled, cannons thundered, and thousands should have followed his bier. But now, alas! by night, by stealth, without even a single drum tap, in fear and dread, we creep breathless to the ramparts." This or one of a thousand other paraphrases will suffice to render the vocal movement slow. And so it is in all slow time. Let it be borne in mind that by expansive paraphrase is meant not merely the substitution of a word or phrase, but a complete and even more than complete filling in of added thoughts, both objective and subjective. And furthermore, during the expressive pause the same mental process goes on as we find in slow reading. "It must be borne in mind that the pause is not mere silence. A very little observation will show the student that, while his voice ceases, the thought continues to manifest itself in pantomimic expression. The pause is made as a result of collateral thinking. In other words, any given idea calls up another train of thought, with which the mind engages itself, and such engagement finds actual expression in the pause. It must be remembered that the collateral thinking may take the mind backward or forward. According to the amount of this collateral thinking will be the duration of the pause.

"An extract from the play of *Julius Cæsar* will illustrate this point. In the fifth act Brutus and Cassius have taken their 'everlasting farewell,' and Brutus ends the interview with these words:

> "Why then, lead on.—O, that a man might know
> The end of this day's business, ere it come!

The first four words of this speech are addressed to the onlookers. The word 'on' takes the mind of the thoughtful and considerate leader to the battlefield where the fate of Rome is to be decided. He perceives that the future of his beloved city hangs trembling in the balance. The appearance

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on the preceding night of the ghost of Cæsar, warning him that it will see him at Philippi, fills Brutus with apprehension. And then, how many of his followers, now so ready to do battle under his standard, will, ere night, lie cold in death upon the bloody field! All this and more passes through his mind, and his solicitude and apprehension manifest themselves in his features and in his body. Then, even the stoical Brutus cannot repress his anxiety, which we note in the words, 'O, that a man might know.' This extract, therefore, well illustrates what was said above—that the pause, as we here consider it, is not mere silence, but cessation of voice while the expression continues in the body. In the second place, it is plain that the collateral thinking determines the length of the pause."[3]

From this discussion it must be clear that true teaching cannot tell a child to read rapidly or slowly. To do so would result in a mechanical rapidity or slowness far worse than the error the criticism is designed to eradicate. Now that the teacher understands the cause of movement he can, or should be able, through suggestive questioning, to get the proper expression, as far as the element of time is concerned.

The second criterion is that of melody, which includes key, inflection, and so forth. The melody indicates the logical relations. Read aloud such a sentence as, John rode to the park last Christmas, changing the meaning, by transferring the significant inflection successively to all the important words, thus:

John rode to the park last Christmas.

John *rode* to the park last Christmas.

John rode to the *park* last Christmas, etc.

Does it not appear that, with each change in the motive, the melody changes?

Take other examples: "Do you think Mr. Jones a good teacher?" "I should think so." Read this answer so as to show the questioner you have no doubt of Mr. Jones's ability. Now read it, manifesting that you don't like to commit yourself. In what lies the difference? In the melody, and in that alone. Again, "When we are in our graves our children will honor it. They will celebrate it with thanksgiving, with festivities, with bonfires, with joy." The inflections on the last four nouns would probably be falling. Why? Because each would be held to be of sufficient importance to

[3] From *Principles of vocal expression and literary interpretation.*

be emphasized by itself, and cut off from the others. To read them with rising inflections would be to manifest the fact that the mind was thinking of them in the aggregate. Once again, the melody shows the motive.

High key shows (relatively) mental or emotional tension; low key the reverse. This is all that space permits me to say here.

Now for the application. When the teacher has ascertained that the fault in a pupil's reading lies in the melody, he must first determine for what the wrong melody stands —for it stands for something, if nothing more than mental blankness. Then the teacher must get back to the reader's mental processes and set them right. It is like a locomotive that comes off the revolving switching table. If it gets on the wrong track it must be backed up and the switching table turned until it is in position to allow the locomotive to glide on to the right track.

It is hardly to be believed that there is so much ignorance as to the meaning of inflection. During the past two years, in schools of our largest cities, I have heard teachers reprimand pupils for allowing their voices "to fall at a comma." As if commas were intended to indicate vocal expression! And when a bright lad used a falling inflection on "want," in such a sentence as "What do you want?" I have seen a class nearly shake their hands off in their endeavor to attract the teacher's attention, in order that, when he said, "What's wrong?" they might shout at the top of their voices, "He let his voice down at a question mark." It is useless to say that this kind of teaching has passed away. I know better. I can take you to schools in New York city, and good schools, too, where you may hear it.

Quality is the third criterion, and it reveals mainly the emotional state. Feeling affects the texture of the muscles, and those that have to do with voice production are peculiarly susceptible. Or better, to be in line with the best modern psychology, certain states of consciousness affect the muscles, and the muscular condition we recognize as emotion. Be this as it may, we cannot disregard the fact

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that there are qualities of voice that we associate with states of feeling, and that is the point the teacher must remember. Fortunately, unless one is deaf, one recognizes instinctively the state behind the quality, so the teacher has nothing new to learn except the application of this principle to reading. It would take us too long to consider this element in detail. I must state, though, that it is here that our schools are grossly deficient. There is no emotion in the average schoolroom. And more, let a good reader come into our schools and the reception his expression will receive will freeze him stiff in one week. This is one of our commonest experiences.

Emotion in reading comes largely through the imagination. Unless the mind conceives the thought how can the nerves thrill and tingle? It is here we need teachers who are themselves lovers of the beautiful, sublime, tender, in order that they may impart their appreciation and feeling to their classes. Emotion is catching, and so is the absence of it! Time, time, time, is the great need here. It takes time to think, time for the picture to come forth in its fullness out of subconsciousness. If it is urged that we should spend time on every important phrase, we should never get through the lesons; I answer, then in the name of reason don't get through. What are we afraid of? Do we boast of our educational progress, and then make quantity the sole test of that progress? But I assure those who have followed me thus far that there is a blessed providence which has so arranged the universe that it pays to be honest in every sense. Is not imagination the basis of literary interpretation, of historical study, yes, even of mathematics and science? The time spent on the development of imagination and emotion in the reading lesson will show its results in every other study, and so, even to the quantity teacher, there is a practical value in the method I suggest.

If, then, the teacher would get the right quality, he must see to it that the child has the proper and adequate stimulus. Appeal to his everyday experience and make that serve as an introduction to the new experience of the poem.

"Do not ask pupils to represent emotions that are too far beyond their experience, such as intense pathos, great solemnity, etc. Reserve these for the upper grades of the high school. Again; avoid the baser emotions, such as anger, hate, jealousy. . . Select extracts in which the characters manifest simple, noble, inspiring, and uplifting feeling. Patriotism, self-sacrifice, love of nature—these are the themes with which the imagination of the pupils should come into contact.

"I heartily advise the teacher to gather a dozen or more extracts and speeches under three or four significant heads, such as patriotism, love of nature, etc., and to keep the class at each phase until definite results are attained. I have no hesitation in deprecating the method that compels teachers to teach any lesson simply because it follows the preceding lesson numerically speaking." [4]

Force is the fourth criterion. It stands for the mental energy. As our desire to impress the hearer increases, so does our force. It manifests will power. When it is absent there is lack of purpose. Of course in states more or less subjective,—soliloquies, for instance,—it is properly reduced to a minimum. Don't tell a child to read louder. If you do, you will get loudness—that awful, grating schoolboy loudness—without a particle of expression in it. Many a child reads well, but is bashful. When we tell him to read louder, he braces himself for the effort and kills the quality, which is the finer breath and spirit of oral expression, and gives us a purely physical thing—force. Put your weak-voiced readers on the platform; let them face the class, and talk to you, seated in the middle of the room, and you will get all the force you need. On the whole, I should say, we have too much force rather than too little. Let the teacher learn that we want quality, not quantity, and our statement of the mental action behind force will be of much benefit in creating the proper conditions.

In our knowledge of the psychology of the elements of expression we have the solution of the difficulties resulting from the complexity and intangibility of vocal expression. The teacher knows now what to look for, and so can diagnose the case. There is one more phase of our method to be considered before the problem can be solved: the teacher must have method, which now he surely has not. As was stated

[4] From *How to read aloud*, by S. H. Clark. Chicago: Chicago University Press.

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at the outset, there is no definite progression from step to step. There are few or no principles given to the child to enable him to grow. I have endeavored to solve this problem in my booklet, *How to read aloud*, and, at this time, I can do no more than throw out a few hints as to the method therein employed. I have used this book and method with special classes of teachers in Chicago, Indianapolis, and Brooklyn, and, I think, with some success.

Let us accept reading as it *is*, and let us suppose the pupil is in the Fourth Reader—say that he is about eleven years of age. What is the first step? To impress upon him that the printed page is a picture; that it contains ideas, sights, sounds. That it takes the place of the author, and that he must listen to it as to the voice of the author. This is the all-important factor. Many of us think we are following this plan, when, in reality, we defeat our ends by the way we use the means. We allow slovenly reading and pass over the grossest carelessnesses, so that, unconsciously, the pupil forms the loosest habits of expression. Then the pupil must be stimulated to hold the thought; to let it hold him, if you will. This, too, is a very necessary part of the training. The defective reading of preachers and authors is not due to the fact that they can't get the thought, but that they are not dwelling upon it in detail while reading. The third stage in the first step is to train the pupil so that he will never get up to read without the consciousness that he has something to give. Let the pupils, and teacher especially, close their books, and so give the poor reader some encouragement. Don't have him read to the backs of the class. How should we like to address an audience of inexpressive backs? I know that following this last suggestion will produce wonderful results, and quickly too. But it has another value: it compels the class to think, to follow the reader, to get thought through the ear (a talent becoming rarer every day), and, above all, it stimulates the imagination. Summarized, the first step means, *Get the thought, hold the thought, give the thought.* Keep at this for a month, if necessary.

"The one object of this lesson is to impress upon the mind of the pupil that words have no meaning unless they stimulate thought. It is perhaps needless to add that the teacher should be on his guard not to teach inflections and pauses and so forth, as such. No other aim should be held in mind than that of getting the pupil to see clearly and to express forcibly."[5]

In the second step we begin to teach the child how to get the thought. Let me quote from a lesson I have prepared for the child:

"Did you ever notice how you think? If you hear the word 'Car,' what do you think of? Some, of a horse car, some, of an electric car, and some, of a steam car. So you see the word 'Car' by itself doesn't give us a very clear picture. The words, 'I saw,' don't mean very much, either. For unless we know what you saw we get nothing to think about. The two words 'in a' don't mean much, and by this time you know why.

"Let us put all these words together and add a word or two: 'I saw a man in a steam car.' Now we have a clear picture. What do we learn from this? We learn that a single word doesn't give us a clear picture, and that it takes three, and four, and sometimes many words, to give us a picture. We can think 'I saw a man,' or 'in a steam car,' but we get a complete sentence only when we put these two groups of words together. We notice also that, while it takes just a moment to see a picture, it often takes many words to describe it.

"What we have done is called grouping; that is, reading several words together just as we read the syllables of a word. Let us try some examples. 'Charles gave a sled to his brother.' Here there are two groups: One ending at 'sled,' the other, at 'brother.' 'I went to King Street with my sister to buy a new hat.' Here we have three groups. Can you pick them out?

"The last thing we are to learn in this lesson is that every group of words has a picture in it, and that we must not read aloud any word until we have got the thought or the picture in the group."

It is remarkable to see the good that grows from this lesson. The children stop to think, O miracle! and that is the beginning of their salvation. Let teachers remember not to teach the children to pause, but to phrase. The pause is a subjective manifestation, and it is a tremendous mistake to approach it otherwise. The artist uses it, later on, for artistic purposes, but then only because he understands its psychology.

By the time the class has mastered these two steps they have discovered that all thoughts are not equally important; that there are principal and subordinate ideas. Now train them particularly along this line:

[5] *How to read aloud.*

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"It is well to remember that the common rule about 'dropping the voice and reading faster' does not always apply to the reading of subordinate ideas. The whole question is, How much is the idea worth? If it is unimportant, perhaps the rule will apply; but there are many cases where the interjected phrase or sentence is very important, and in such cases the time may be very much slower than it is when reading the principal sentence, grammatically speaking. Much time should be given to exercises under this head. It is the first step toward introducing variety into the reading. Instructions to pupils, telling them how to read such examples, should be avoided at all times. The one object should be to get the pupil to feel subordinate ideas and their relation to the principal ideas."

This is as far as I can go toward showing the method I would urge upon the teacher. Granting that circumstances alter cases, granting every possible objection; does there not remain the principle that we must show the pupil how the thoughts get themselves expressed in the printed word? Let no one fear the process suggested will make the pupil cold and mechanical. In fact, just the reverse will happen. We are simply showing him that he must read as he would if the words were his own; that reading is not a perfunctory process nor yet, in the beginning, an art. On the contrary we show him that he is potentially a good reader, if he will but go at the work in a painstaking way.

If the teacher will spend three months perfecting merely these steps, a startling improvement in himself and pupils will be noted. The child will have acquired power, and that is the main thing. When he goes into the next class the teacher of that class knows for what to hold him responsible, and can go on to higher and better work. So that, when the highest class is reached, the time now wasted on reading may be devoted to literary interpretation through the voice, the consummation of all training in vocal expression.

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VI

PAIDOLOGY, THE SCIENCE OF THE CHILD

In paidology, the science of the child, I have expressed the idea that a pure science can be formed whose work is upon the child alone, and which is just as separate in its bearings from other sciences as any one science can be. This does not exclude the idea that there may be an applied science of the child, for education is such a science, nor does it claim that the study of the child is not a proper part of the work of various sciences, but that, above all this, there is a pure science of the child which is in and of itself a whole. Also I have called attention to the fact that this science of the child is important enough to require and to demand a department of its own in college. To make paidology of some practical worth I have tried, in the following manner, to outline it, so that its work may be better understood.

The general divisions of paidology are (1) The child in history and (2) The child at present.

The child in history is a study of the consideration of the child in the past, and can afford means for comparisons and contrasts both among the old nations themselves and also with the present. From this work the present can be enlightened on many points that will be of great aid, no doubt, in the care and training of the child. This study will include education, rearing, training, relation of child to the parent, to the state, to society and to religion, dress, food, etc. This work will be upon the child in the old civilizations of Africa, of Asia, of Europe, and of America. This will study the child in the mediæval times of Europe and the earlier centuries of the modern times, and be brought down to the modern times. In America the study of the child among the early settlers will form an interesting feature. The works of his-

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tory must be thoroughly searched to gather up material for this division.

Under *The child at present* will come matters that are of interest and profit which may be found among the various peoples at present in their relations to the child. The divisions under this head are (1) The child among uncivilized and semi-civilized peoples and (2) The child among civilized peoples.

The child among uncivilized and semi-civilized peoples is a very large field and one in which the material has been but little brought together. Travelers and students of these peoples have given very much in their writings that will afford excellent matter for the building up of this part of paidology's work. At present I shall not attempt to outline this division, but give only a few of the topics which are found here, as, games, songs, sports, playthings, language, care and protection of children, training, carrying of child by parent, the cradle, dress of child; relation of child to father, to mother, to other members of the family; affection of parent for child; infanticide; birth and death and reaching maturity of the child; societies for children, myths, sex of child, etc.

The child among civilized peoples is a heading under which most assuredly will be found those things pertaining to the child which are of the most practical and most vital interest. Hence this part of paidology needs to be very carefully and closely outlined and studied. The divisions here are (1) The abnormal child and (2) The normal child.

By the term *abnormal* is meant to include all classes of children that are outside the ordinary family of children. This word is not used in the usually strong sense as meaning something extraordinary, but as a simple term used for purpose of classification. Under the heading of *The abnormal child* are placed (1) defectives, (2) delinquents, (3) dependents, (4) wildings, (5) exceptionals.

In the *defectives* are found the blind, deaf-dumb, deaf-dumb-blind, insane, and feeble-minded (idiots and imbeciles and foolish). This is a vast field in the study of the child, and one in which very patient and careful work has been

done. To the paidologist this will be ever a great source from which to draw.

In *delinquents* are classed the criminal children and those placed in situations to become criminals. Just at present this is a field of great promise in which to work, as so much interest is being taken in this direction. The remarkable changes that are going on in the treatment of criminal children, and the means being taken to save those likely to become so, open up to paidology a phase of child-life that is full of interest and discovery.

In *dependents* are placed orphans, foundlings, neglected children, and all that need the careful attention of society, state, and church. Under this head can come child-labor, because in this are found those children which need the strong arms of law and love to help them. The workers in this department are gathering material of great importance to humanity, and herein will the student of paidology find much for his consideration.

In *wildings* are included those children who have been lost or abandoned by parents, or in some other way isolated from mankind and have grown up among animals or wholly alone. The study of such may open up some new lines in child-philosophy.

In *exceptionals* are put all children outside the normal class and not included in the foregoing classes of the abnormal. This takes in the dull, the stupid, the neurotic, the choreic, the rachitic, the anæmic, and the like. This will deal with those children met in society and school that are just over the borderland from the ordinary child.

In a general way *The normal child* may be outlined as follows: (1) *a*. The body, *b*. The mind; (2) child-activity; (3) paidometry; (4) observation; (5) laboratory; (6) general matters.

In order that the higher side of child-nature—the mind—may be correctly studied, must that part in which the mind has its dwelling—the body—be well understood. It is quite important that the student should have a knowledge of the formation, growth, and development of the body. The

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child's body lives in two quite distinct worlds, hence *The body of the child* divides into the two topics (1) Before birth and (2) After birth.

In order better to understand the body of the child as found after birth it is well to study it in its conditions before birth, and with such a continuous study is then a view given of the body which will be of great aid in the study of the mind. Considerable and very careful studies have been made upon this period—*The body before birth*—and when well gathered up, will surely be of very great help to the paidologist. There are many interesting matters to be discussed here, among which are, the differentiation of sex, the influence upon the child by the mother's surroundings during gestation, causes for the production of deformed children and of monsters, influence of heredity upon the form of the body, and the like. The study of the hygiene of this period is one that needs to be carefully made by every student in college, and an acquaintance with which must ever be the duty of one who engages in instruction about the child. There is so much of interest and of value in this period that to the paidologist it must be made an especial part of his studies.

The study of the child's body begun before birth must be continued after birth, with such changes as necessarily come in when its entire surroundings are so suddenly changed as at birth. The divisions of *The body after birth* are (1) anatomy, (2) physiology, and (3) hygiene.

The study of the body before birth will give the form and structure with which to begin such study after birth—*anatomy*. Those parts of the body which are yet incomplete at birth must be followed up to completion. The different parts of the child's body should be known, and also their location and relation to one another. The minute study of the parts of the body will form interesting and instructive work here. The changes in the body that take place at pubescence are very important and necessary to be studied thoroughly. The comparative study of the young child's body with that of the adult person, and also with older children and the young of animals, will give results of much value to

paidology. The deformities of the body, although in some degree coming under the abnormal child, must be studied under this section; such as, spinal curvature, pigeon-breast, club-foot, bow-legs, etc.

After the structure, position, and relation of the parts of the child's body are known, then should come the study of the use of these parts—*physiology*. The anatomy having given the form and location of the parts of the body, so can their adaptability be considered in regard to the work they must perform. The bones, the muscles, the heart, and other organs should be carefully studied so as to learn how they do their work, the requirements that are needed in order that they may do this work in a proper manner, and other matters pertaining thereto. The relation between the brain and the other parts of the body, the manner in which neural communication is made, and what conduces to the best communication are matters of great importance. The way in which food is converted into tissues of the body and is torn down again, and how this can best be done must be known. The strength of the working parts of the child's body at the different periods must be investigated in order that these parts be not overworked, and also that necessary activity may be allowed them in which properly to expand. The capacity of the various organs, as, for example, that of the stomach, must be known to the student of paidology. The comparative study of the capacities and abilities of the adult with that of the child, and of the child at different stages of its growth, will be of great value.

When a knowledge has been gained of the location, structure, and relation of the parts of the body, and next the use and capacity and the manner of the working of these parts, then follows the study of the care of the body and the looking out for such conditions as will best afford cultivation and growth and will keep all in a healthy tone—*Hygiene*. This includes: The watchfulness of the mother during gestation; the proper care and attention to the child at birth; the location of the child's sleeping room, the air of this room, kind and amount of cover, the child's sleeping place, and the

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proper cleansing of the room; quality, quantity, preparation, and manner of eating the food; same with drink; kind and amount of clothing for the different ages and seasons, and suitability to the permitting of the movements of the body; amount of work and of play necessary for the proper development of the body; cleanliness and care of the body; a knowledge of and a guarding against the evil habits of the various ages of the child; an understanding about the common diseases of children; manner and period of incubation of infectious diseases, their length of duration, and proper isolation of children so affected; care of the child in sickness; and very, very many other matters which are necessary to the keeping of the body in proper condition for the activity of mind.

All the study of the previous parts of this outline, and all that may follow, must be thought of as a preparation and an aid to the study of the child's mind. The mind of the normal child, as found under our present civilization, is the one thing above all others that should be investigated. The better and more fully understood is the mind action of the child the more safely will civilization build. That we know very little about child-mind, but that there is a great awakening, is common knowledge. The general headings of *The mind of the child* may be (1) psychology, (2) ethics, and (3) religion.

Under no part of paidology's work has there been so much work done as in that of psychology, hence here is opened up to the paidologist a vast amount of most excellent material, which makes it very necessary that much time and consideration must be devoted to the results already obtained. This work has gone over so much and is of so great worth that it needs to be carefully arranged, which will require much patience and effort. For the present I must content myself with a very light survey. The divisions of *psychology* are (1) The senses, (2) The intellect, (3) The emotions, (4) The will.

The child lives so much through his senses that herein are found many opportunities for investigation. There has been a great deal of work done in this field, but there remains a much greater amount to be done. The sense of sight in the child has been studied from birth to manhood, and results

of the greatest consequence have been obtained. The hearing of the child has been studied from birth through the various ages of the child. In the young child touch has been investigated more than in the older child, and herein lies a great field open to the investigator. Taste has received some attention, but not such as is required. There seems but little to have been done upon the sense of smell in the child. In both the fields of taste and smell there has been more study made upon the abnormal child than upon the normal child, and the results so obtained show that these two senses will give promising results when carefully studied. The temperature, organic and muscular sensations have not received so great attention in the study of the child as will need to be put upon them.

There are very grave doubts being expressed now by students of the child in regard to the old way of applying the studies of the adult to that of the child. As one dives down into child-nature he is compelled to recognize that the child is not a dwarfed adult, as he has been too much considered, although it may be true that the adult is a grown-up child. Thus the action of the child's intellect must be looked at wholly from the standpoint of the child and not from an adult standpoint. It does seem as if in this study of child intellect that we must lay aside all ideas gained in philosophy and psychology from the study of the adult till we can come back to them from the study of the child. As has been said by one, we must not go from adult-psychology down to child-psychology, but from child-psychology advance to adult-psychology. There are many questions to be investigated here, some of which are the following: When does the child first become a conscious being? How does the mind display itself through the different periods of the child? Is it true that the child, in his intellectual development, shows the intellectual stages of the race? Is there a period in the child's growth where imitation or curiosity or imagination, or any one act or group of acts of mind, hold supremacy? Is the child just as capable of judging and reasoning upon his own welfare as is the adult upon

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his own, or at what age does the child acquire this power? There must be carefully studied in the child the different acts of mind, as, judgment, reason, imitation, interpretation, imagination, memory, self-feeling, discovery, curiosity, etc.

The child expresses his emotions so plainly, in so natural a manner, that to the investigator of child-mind are thus laid open almost the pure acts of mind. The young child in no way conceals his emotional nature, but displays it just like a young animal. The emotions of the child have been somewhat studied, and good results have been obtained. Enough has been done to show that this form of child-nature will repay study upon it and that we must well acquaint ourselves with the phenomena here, in order to become familiar with the child-mind. Each phase of emotion—as, grief, love, jealousy, bashfulness, anger, æsthetic feelings, and the many others—must be closely studied, for such will give great aid in the view of the child.

The will of the child above all needs careful study. The manner in which he forms his choosing, and the way of carrying out his choice, can only be learned by closely observing the child himself. Among his ways of indicating will is the expression of countenance, which pretty well shows if the child has accepted or rejected the commands and advice of others. In his bodily movements can the will be well studied, for the child, from earliest life, even through youth, plainly gives expression to his volitions through his body. Again, the child's will may be noted in the bearing of one child toward another. Also, the child's language gives wonderful means for the study of his will, for the child is not at all sparing in his language to express his choices and preferences. The questions of the origin of will, growth of will, and others, can only be answered by the child himself, if ever they are to be answered.

There has been so much written about the morals of the child that is based upon no observation of child-nature at all, or upon a very hasty look, that one at first sight is almost persuaded to throw aside all the writings upon the ethical side of the child and begin alone upon child observation.

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Although much of this writing is sentimental and worthless, and based upon stunted ideas, yet there is, here and there, some work that is of great value. In this line of work the paidologist must carefully sift and resift this material, but much more should he investigate the child. There are many questions in child-ethics that must be answered before we can rightly understand the child. Some of these questions may be impossible to answer, but none of them can be approached at all except first by careful study of the child. Among such questions may be these: Does the child at any time show that he has ethical ideas which have not been directly implanted in him by parents or others? What is right and wrong to a child? Under what conditions does the child yield true obedience? Is the child by nature moral or immoral? Is the child naturally a selfish being? And many others of equal importance.

It has remained for this awakening to the need of the careful study of child-life to show how little we know of the religious perception of the child. The very few studies that have been made in this direction have revealed to us almost a new world. The inquiries concerning the child's religious nature demand the most careful attention, for upon such inquiries depends very much the future good of the child and of the race. This work must be done in the calmest, most scientific manner, for by no means must there be theories to sustain or biases to support. The question of religion seems to have so different a bearing from any other question that the investigation of such in the child must be very, very carefully approached. In this particular field should the investigator especially keep before him that he must look at this only from its scientific bearings and not from any other, leaving his results to be applied directly by those whose business it is to make such application. Just the bare facts with bare results should be given. A few of the many questions are: Does the young child show that he has a religious nature? How does the child receive religious instruction and give it off again? Does the child make his early conceptions of religious beings and places wholly of earthly material? If

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so, at what period does he begin to show his power to consider such as spiritual? Does the child naturally reach a period of doubt, or is this doubt brought forth by the learning that early teachings are false? Is there truly a "storm and stress" period wherein the child's whole being is torn asunder by fears and doubts and troubles? What are the beginning symptoms of such? how exhibited? How does he overcome it? its time or origination? and duration?

The topics which are considered under *Child-activity* could well have been placed with the other headings, but this side of child-nature is of so great importance and shows so well the free action of mind and body that there seems to be a necessity for making a separate heading, so as to call special attention to it. In no way can the child be better learned about than by a proper study of those things which he does wholly free from adult influences and restraints, observing the manner of his doing these and the results upon himself from such. Among the different things that may be placed under this heading I select the following, which will illustrate what I mean by this section: (1) plays, games, songs; (2) language; (3) collections; (4) manufactures; (5) organizations.

There has been considerable work done in the gathering up of the plays, games, and songs of children, with which the paidologist must acquaint himself. There is a great secret of child-nature to learn of from these; for herein is the child's greatest pleasure. Also can be studied the manner in which children control themselves when from under the influence of adults. The social side of the child is well displayed here. There are many things to be gained in a study of these spontaneous doings of children.

There are at least three distinct phases of child-language. The first is the mother-tongue, with which the child acquaints himself. There has been quite a great deal of excellent study upon this, which affords a good basis for the paidologist to work upon. Every child passes through this period, so that ever will an abundance of opportunities be offered for studying this. The second phase of child-language is that which occurs in the early years, about the time

of the learning of the mother-tongue. It is language that is produced by children who, in their struggles to learn to speak, —perhaps not being able to master the difficulties of the mother-tongue,—have made a language of their own from the expressions which may be easiest to them. This is not the language of defective children, for the mother-tongue is learned and used by these children in after-life, and the made-up language disappears. As far as I can learn there is very little upon this phase of child-language, but sufficient studies have been made to show its importance. This second form of speech is, perhaps, involuntarily and unconsciously formed, whereas the third phase of the language is wholly voluntarily done. This is the formation and use of secret-languages, which rarely occur before the eighth year, and usually disappear after the fifteenth year. This has received but very little attention, but promises good results when carefully studied. There is also the sign-language of children, and under this heading may be studied the *cries* of children, as they are a kind of language.

The things which the child gathers about him well illustrate the directions in which the child-mind is turned. I do not mean, in this, simply the curious things which he gathers up, but, as well, the common things with which he surrounds himself. It will be a very happy study to make note of the collections that the child makes at the different stages of his life. A boy's pocket may have something of scientific value in it.

I fully believe that the things which a child makes, the manner of his workings while making them, the thought and attention he gives to them, more nearly than in any other one way show the individuality and inclination of the child. It appears to me that, could we devote special attention to watching a child as he works all alone, and then study the things he makes, no better insight could be given us of the nature of that child. This is a field that must be worked if we wish to learn of the true nature of individual children. Another side to this is that the study of these manufactures may lead to some useful inventions, for, already have chil-

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dren given to the world some of its most useful inventions—at least it will repay to encourage such in children. Also the unfolding of the inventive faculty in the child may very well illustrate its development in the race, so that here comes in a very interesting reason for studying these manufactures.

What a great work there is lying open to the student of the child in the almost neglected side of child-activity as displayed in his organizations. How many things there are awaiting the investigator in this direction! One can hardly realize that all forms of government may be represented in these organizations of the child. I am sure that when this feature of child-life is well studied,—beginning with the very simplest organizations of young children and running through to manhood, including those for play, for study, and for work, going into those in school and church and college and society—that many ideas will be given which will aid adult organizations in their workings,—even our governments may be modified by such studies.

Under *paidometry* can be placed those general observations and considerations of the body of the child which have so great an influence upon the mind. This considers the state of the general health and condition of the child, which can be made to a great extent by a study of the features, of skin, of muscles—of the body in general. This will take up the height and weight of children at the different ages and of the two sexes, and the relation of height and weight. General muscular development and strength and endurance form a topic. Measurements of the head and face and different parts of the body will make an important feature. Breathing capacity, with girth of chest at forced inspiration and expiration, and at usual breathing, must be considered. Color of the hair, of the eyes, and of the skin fall under this. The state of vision (keenness, color-blindness), hearing, touch, taste, smell, general sensibility, and sensibility to pain, in their general expressions, will form an interesting chapter. There are other important topics that may be placed in this section. Quite a good deal of work upon children has been done along these

lines, which will afford material for much study, and show what is needed to be carried on in future investigations.

Just at present the greatest work upon the study of the child is along the line of *observation*. Some most worthy work has been done here, and there is great promise of more. As much of this work can be done by parents and others, who need not at all be scientists, it remains to the paidologist to take note of this and to study how to direct the work properly. He needs to acquaint himself well with the work that has been done, and is being done, and thus learn of the best methods to pursue. In this there are two general lines to follow, the one being upon the individual child and the other upon children in general. Both have been very successfully pursued.

The observation upon the individual child may be a study of the child in a general way, or a study of some special line. The study of the child in a general way consists in the noting down of facts in the life of the child, as they may occur, without giving special attention to one thing more than to another. These observations may be made daily or weekly, or from time to time, as the observer may choose. The observation upon the child in a special way consists in the taking of some special feature and making notes only in this direction. In this way whatever study may be made of the child is only for the purpose of thoroughly getting at this one thing in view; so, only such things are considered as have a bearing here. To a certain extent these two methods—the general and the special—may be combined. Some most valuable studies on individual children have been published which are very helpful in this work.

Observation upon children in general has likewise the two lines of study—the general and the special. The general method consists in the observation of children at any time and under whatever conditions one may find them. There are many good things to be obtained from such study, for this best gives the doings of children in their freest moments and under the most varied conditions and surroundings, and many things can be learned only at such times and can never

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be gathered in any other way. The special work here consists in making a study along some particular line, as that of fear or imagination or anger or the like. This may be done by always noting the one thing under consideration when met with in children, or by putting questions to children and studying the replies so obtained, or by noting the work which the child does while under the influence of the mental act being studied, or by noting the language of the child, and in many other ways. This work may be done by the paidologist himself, or through syllabi he may direct others in the observations, which he can sum up. Under this heading can be placed the observation of one's childhood as revealed in memory.

There are so many things to be considered in this study of the child that many ways must be devised to do the work. I think all will agree with me that no better or safer results can be obtained than by the laboratory method. For pure, scientific, close, calculating study the work of the laboratory can have no superior. The investigations in the laboratory have been a very great help in bringing other sciences to become sciences, so this must be a great aid in bringing the science of the child to become a science. In the laboratory the students in college can be brought to learn how to study the child as in no other way. I have done sufficient work along this line to know that a very good outline of laboratory work can be arranged, similar somewhat to such an outline as is used in physics or chemistry or psychology. In a city where there are proper facilities, such work can begin at birth and run through the different ages of the child. With the very young child this work can be arranged for as for clinics. With the older children the work can be carried on in the paidological laboratory of the college. It is hardly necessary to state that, above all things, must the work be so done as to be neither unpleasant nor injurious to the child. In such work there are two lines, as in other laboratory work. One is the general or elementary, or, one might almost say *quantitative*, and the other is the special or advanced, or *qualitative*.

Just as it is necessary for the students in college to have a preliminary course in the chemical laboratory, and also in the laboratory of other sciences, before they can advance to the higher and more difficult work, so must they have a preliminary course in the paidological laboratory before they should begin work in the higher lines of paidology or to make investigations for themselves. This general course must be so arranged as to give to the students a general insight into child-nature. It must begin with the child at birth or at the earliest period that can be arranged for, and carried on up to manhood. From the study that I have been able to make along this line I have prepared a list of over 200 numbers in such a course, beginning at birth of child and going into the older years, which, I think, can be used with great profit. From this study I am convinced that, some day, there will be such a general course of laboratory work in paidology as will compare favorably with that of other sciences.

The special work is for the older students. Just as other sciences have advanced work in the laboratory, so must paidology prepare for it. After the student has noted the work in the elementary course, and has, in a general way, acquainted himself with knowledge of the child, then he may be prepared to take up some special line of investigation for himself. I can conceive of no subject that can furnish more good material for special investigation than can the child. These investigations are of so much interest in that not only are they in and of themselves full of scientific worth, but also the results may all be full of practical value, for, when once obtained, there is always the subject himself—the child—at hand to be benefited, and, in benefiting him, all are benefited. This adaptability of the results of paidological laboratory work is, in many ways, very striking. The paidological laboratory will contribute to the valuable aid to humanity that is being given by the laboratories of the other sciences.

After running through the outline I find several things about children that are important, yet do not seem particularly to fit into any of the headings, hence I have made a general heading for them. These are matters which must

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be studied in order to have that broad general knowledge that is so greatly needed in a science. There are several topics which may be placed under *general matters*, of which I mention these few and cannot now further speak of them: (1) The child in literature, (2) myths in regard to children, (3) mysterious disappearance of children, (4) the child of genius, (5) laws in relation to children.

As will be seen, I have preferred to make the divisions of paidology lengthwise rather than crosswise. By this I mean that I wish to begin with a study of the earliest history of the child and lead up to a study of the child in the present, going, with this, into civilized and uncivilized peoples, and, among civilized peoples, into both the normal and abnormal sides of childhood, and upon the normal side studying the child from birth, and even before birth, through infancy, through childhood, and through youth—thus in a continuous whole—rather than to divide his study into the divisions of infancy, childhood, and youth, as one might at first wish to do. There are several reasons why this manner of outlining is preferred; the most important, perhaps, being that this lengthwise division of the subject places the child in a center toward which all lines of study can be directed in a continuous, systematic whole, which might not be the case if the divisions were made crosswise. I am inclined to think, however, that, as we go further into this study, an outline combining both forms will be arranged, in which outline the general threads will run lengthwise, and among these will be found places where crosswise divisions may well be made.

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VII

AMERICAN GRADUATE SCHOOLS

University, or graduate, work is of comparatively recent growth in American institutions. The earliest efforts to organize such work, making it the crowning superstructure of collegiate instruction, were made by the leading New England colleges some thirty years ago. But the founding of Johns Hopkins University in Baltimore, twenty-two years ago, largely on German models, gave to this movement its strongest impulse. Johns Hopkins began its career in 1876, with a graduate attendance of 56 students. Four years later it counted, first of all American institutions, over a hundred graduates. The next institution to report over a hundred students was Boston University, eight years later. Then followed, successively, Columbia, Harvard, Cornell, Princeton, Yale, Chicago, Leland Stanford, and others. The first State university to pass the 100 line was the University of Pennsylvania, four years ago. Next came the universities of Minnesota, California, and, last year, Nebraska. Altogether there are at present in the United States about sixteen universities with an enrollment ranging from 100 to more than 700 (Chicago) students in more or less well-equipped graduate departments. But we are witnessing only the beginnings. A brief comparison between American graduate schools and German universities as regards attendance and efficiency, will aid in forming a fair estimate of the relative development of the former as well as their needs.

A numerical comparison of graduate students in America and Germany is, at best, difficult and delusive, because of the presence in the educational systems of the two countries of conditions which cannot be exactly measured and weighed. In the first place, is it fair in such a comparison to assume that only American college graduates are on a par with German

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university students? Unquestionably some of our best colleges reach higher standards than the German Gymnasium, overlapping it and doing in part real university work. But, on the other hand, a great many collegiate institutions fall more or less below the Gymnasium in point of efficiency; some of them being even of a kind that would be proscribed by public opinion in Germany. Again, should the comparison include all German university students and all American graduate students? The German enrollment comprises students of medicine, law, theology, and even some technical branches, while such students are not generally counted among American graduates. But these students are actually all (except in technical branches) Gymnasium graduates in Germany, while, in America, a college diploma is required only in two or three professional schools, whose students are then reported as graduates. In other colleges, graduates are comparatively rare, save in a few of the stronger institutions, as, for instance, Yale, where, in 1896, their approximate percentage was, in medicine, 18; in law, 30; and, in theology, 89. Yet, counting them all would increase considerably the reported number of graduate students as a whole. On the other hand, the method of reporting graduate attendance in America is yet, in some institutions, too lax to make the official returns always reliable. An example or two will prove this. Some years ago, a university in the central division of States reported nearly 200 resident graduates. The next year the attendance had dwindled down to 3, the number of non-residents having swelled in proportion. Another institution in the same division counted, five years ago, over 100 resident graduates, and two years later only one resident, while not a single non-resident remained to tell the story of the hundred.

It is evident how precarious must be any attempt to strike a balance between these different conditions. Yet, making allowance for discrepancies that cannot be exactly measured, the German university and American graduate school may, on the whole, be accepted as proper units for comparison. And a statement of the attendance at each, though not an absolute comparison of equivalents, is relatively correct

enough to be instructive—especially when due allowance is made for professional students in German universities.

According to the report of the commissioner of education there were, in 1894-95, altogether 4273 resident graduates enrolled in all the universities and colleges for men, or men and women, in the United States. The enrollment of university students in Prussia—a country not quite one-half as populous as America—was then 27,962; that of Berlin alone about 4800. Deducting students of law, medicine, and theology, the number in Prussia was about 8000. The enrollment of graduates at Chicago (then numerically our strongest graduate school) was, the same year, 593, a number which, even with the college Seniors added, would not amount to one-half of the attendance in the philosophical faculty at Berlin. And yet Prussia has not the largest percentage of university attendance in Europe. Belgium and Scandinavia have one considerably higher.

But numbers mark only a part, and the less essential part, of the development of graduate schools. Far more important is the growth of their inner strength. The aims of graduate and undergraduate schools, though alike—with a difference of degree—in various points, yet differ in at least one essential. Both, besides their special aim of preparing young men and women to go out into life stronger in intellect and character, have the high trust of being custodians of the learning accumulated by past generations, and of transmitting, undiminished, this rich heirloom to future generations—a trust without the faithful discharge of which humanity would lapse into barbarism. But the graduate schools have, in addition, the not less important duty of perfecting and increasing this heirloom; of ever widening the confines of intellectual acquirements, a duty without the performance of which our civilization would, at best, become stagnant. But this duty of investigation, incumbent alike on teachers—especially on them—and students, requires for its ideal accomplishment the presence of many favoring conditions, among them these three: First, a body of teachers who have mastered some spe-

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cial line of research, so as to have a clear comprehension of its problems and the methods by which to pursue their solution; and, moreover, who have evidenced fitness to grapple in earnest with these problems. Second, ample leisure for such teachers not only to take note of the ever-extending work in their field, but above all to devote themselves to patient and time absorbing investigation. And third, a scholastic spirit among teachers and students. Not, indeed, a spirit hostile to that higher inspiration which is the life of all knowledge, but a spirit to which a new fact, destined to be minted as part of the circulating medium of the intellectual world,—a sober and carefully weighed scientific exposition,— is of more value than undigested appeals to emotion, or ostentatious displays of oratory, rising, with the noise and flash of a rocket, to vanish in smoke.

How far are these conditions realized here and abroad? In Germany no one can, as a rule, aspire to any university position without having first gained the highest university degree conferred in his faculty, though, exceptionally, men of rare merit may be called to such a position without this. Nor is this enough. Generally the aspirant must have evidenced his gift as a scientific explorer by publishing, besides his doctor's thesis, one or more scholarly investigations. Having attained to a *docentur*, it is by scientific competition alone that he can rise to a professorship. Neither a docent nor a professor is an instructor, in the ordinary use of the term. The docent is allowed, but not required, to teach or lecture. The professor's duty in Europe is to lecture, on an average, from four to six hours a week—in some instances only two hours. In Prussia, indeed,—owing to the fact that all so-called "private" lectures are specially paid for by a small fee,—many professors are induced to raise this standard considerably. Though, unquestionably, these privileges lower the teaching proficiency of European university men, yet the intense scientific production of Europe, its acknowledged ascendancy in the field of investigation, is a proof that, as a rule, they are not abused, and that the university chairs are no sinecures.

With these conditions, and the presence of a large body

of well-trained students, the scholastic spirit cannot but thrive. Yet, counteracted by various unfavorable social agencies, its powerful influence is far from reaching the whole student body; and the percentage of European university frequenters, to whom their free university life is an opportunity for more or less frivolous idling and pleasure, is far from inconsiderable.

In America, all these conditions have shaped themselves more or less differently. Indeed, a few institutions, gradually grown from the rich soil of Eastern culture, or rapidly brought to ripeness by the necessities of the times, come more or less near the best German universities in the general scholastic equipment of the teaching body, the leisure and opportunities offered for scientific research, and resulting scientific productivity. But when we consider not exceptions, but the whole community of American institutions of learning offering secondary degrees and reporting graduate students, the case is very different. Presumably all our 130 universities, and a great many colleges besides, offer higher degrees. In fact, over 150 such institutions reported graduate students in 1893-94. In the great majority of these institutions, the highest university degree is represented among the teachers only by exception, when at all. In the others, it appears with increasing frequency, according to their standing; but only in one is it held by practically all the teachers. Moreover, secondary degrees of various kinds, where they do occur, are too often complimentary. In 1893-94, not less than about 800 honor degrees were granted in this country, the State of Ohio standing foremost, and the State of Minnesota last, in the exercise of this undesirable liberality. It would indeed be inexcusable narrow-mindedness to deny the patent fact that many a holder of a lower degree, or no degree at all, may eclipse, in his line, many a proud holder of the highest academic honors. And the best degree, that of proficiency, may well continue to be recognized. Yet we do not work and advance by rare exceptions, but by the accumulated force of all. And it is no secret that, except in our foremost uni-

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versities, other considerations than scholarly productivity have, in most cases, determined the appointment and promotion of teachers. Finally, most of our American graduate teachers, save in a few favored institutions, besides being often responsible for more than one subject, are too busy also with an exacting undergraduate instruction to find needed leisure and energy to follow and advance their science to the extent they might otherwise do. And the wonder is only that so much is done under such conditions.

There is a strong tendency in the entire country toward higher standards. But the best standard can be reached only when the line between college and university shall have been clearly fixed so as to impair the functions and dignity of neither; when the privilege of establishing degree-conferring institutions in the spirit of manufacturing enterprises, where partiality for cheap labor is prone to compromise with glaring insufficiency, shall have been abolished, and when public opinion shall recognize that, in a true university, not sectarian but scientific purpose must hold the scepter.

The time may not be distant when a reasonable number of our two or three hundred universities, and colleges with university pretensions, shall have attained, by the power of their entire equipment, such a dominant position that weaker institutions will be restrained by enlightened opinion to their proper and nowise less useful sphere.

But if American universities are yet in an early stage of evolution, they nevertheless bear the stamp of noble promise and individuality. The intimate union of college and university is a source of strength, intellectual and moral. While the German student, suddenly released from discipline and a strait-laced gymnasial curriculum, tending to check the development of intellectual individuality, enters his university like a new world, where it takes time and effort to be duly oriented, the American student, graduating from a college largely influenced and liberated by the university spirit, and with a curriculum sufficiently plastic to allow for individuality along certain congenial lines, simply passes over into a higher division of his old school, where, without delay or loss

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of balance, he continues his work according to preferences apt to have been already formed and developed. Moreover the sudden change, from strict surveillance and familiar surroundings to unbounded freedom among new associations, is fraught with perils which the American system, in a large measure, removes. The American graduate student enjoys, no less than the German, intellectual and spiritual freedom; and he is, on the whole, better prepared by his previous training to use it. To this should be added the many excellent results of our system of opening most colleges and universities to men and women alike; a system which, though now adopted with few or no limitations in the universities of France, the Netherlands, Switzerland, Scandinavia, and Finland, and, with greater restriction, for the universities of England, has nowhere in Europe been tried in the higher schools preparing for the university.

Again, the American university, by not being rigidly divided, like the German, into certain stereotyped faculties of mediæval lineage, will possess a high degree of plasticity, enabling it to adapt itself readily to the varying needs of an ever-progressing culture.

And, finally, in material equipment the stronger American institutions are fast approaching, in some respects admittedly outstripping, the greater European universities. And their libraries and laboratories, especially the former, are more effective as educational aids, by being better and far more liberally adapted to the convenience of the students than the European.

Thus the American university, already a strong power making for intellectual and spiritual growth, and for the advancement of knowledge, which it is the duty of every enlightened people to prosper, may well look forward to a future rich in promise. And Europe can nowise afford to neglect an earnest and attentive, not to say jealous, study of the significant evolution of higher education in the New World.

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VIII

DISCUSSION

ANOTHER SOCIALIST VIEW OF EDUCATION

The interesting articles by Messrs. Matchett and Sanial, in the January issue of the REVIEW, do not seem to me to give quite as clear an idea of the socialist view of education as they should. Under socialism, I take it, the following conditions would obtain:

1. Education would be directed to developing in the fullest manner the capacities of the individual, both for work and restful enjoyment. At the present time it is necessarily directed, in the majority of cases, to developing those faculties which are commercially valuable; and even in the matter of producing useful (*i. e.*, useful to purchasers) articles, cheapness and speed, rather than great excellence, are usually sought. Every teacher of science or art (in the broadest sense) knows how few students, under existing conditions, can afford to take the time to do the best work they are capable of. All of this would be avoided under socialism.

2. Education would not be confined to a certain period, but would be continuous throughout life. Every individual would have leisure to exercise his intellectual or mechanical faculties, and seek instruction—which would be freely offered —throughout the whole of his life. He would never be finished. This is exactly what is done at the present day by every cultivated person *who has the opportunity*, but whereas he is now a very rare exception, under socialism this manner of life would be normal.

It is not possible to dispute that, with our present facilities for production, the above conditions might obtain if society were organized on a co-operative basis.

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IX

REVIEWS

The study of children: and their school training—By FRANCIS WARNER, M. D. (Lond.), F. R. C. P., F. R. C. S. (Eng.). Tables and illustrations. New York: The Macmillan Company, 1897. xvi, 264 p. $1.00.

Among the pressing problems in modern educational practice none perhaps is more important than that of the proper classification and training of school children. Under the operations of a compulsory-education law in many cities and States what have long been pressing problems become burning ones. How large a proportion of children with slight defects should be admitted into regular classes of the public school? To what extent must defectives vary from the normal to be fit subjects for training in special schools? These are questions asking harder than ever for answer. The imitative instinct in children is so intense that healthful children with their strong tendencies to imitative reproduction should be safeguarded from the demoralizing influence of defectives. The unwisdom of indiscriminately thrusting into the same public schools all children in the community of school age is likely, under maturing conditions, to become more violently demonstrated than ever. The unreasonableness of grouping large numbers of pupils in a single classroom chiefly on the basis of age has been conceded generally. While it has been fully recognized that any adequate grouping and classification must take into account both physical development and mental attainments, the pressing need has been appropriate criteria for estimating the development of the child in these important respects. Some years ago an attempt was made by a committee of the Psychological Section of the British Medical Association to lay the foundation for this work. The work under review embodies in popular form the results of the investigations conducted under the direction of this association as well as a comprehensive outline of the general methods of observation employed.

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The method of observing and describing children set forth by Dr. Warner is of great practical value. It is the outcome of twenty years of experience of a practical and successful physician, and gains through having been tested by the personal examination of one hundred thousand children in schools in and near London. In the systematic examination of children Dr. Warner would have the observer lay stress on three points: (1) *Development* of the body and features; (2) *brain condition* as indicated by "nerve-signs"; (3) *nutrition* and health of body. In his schedule he provides besides for a school report upon the mental and general character of the pupil. The status of the child is determined by reference to these standards. Out of 50,000 children examined (26,257 boys, 23,713 girls), Dr. Warner found in the case of the boys 8.8 per cent., in the case of girls 6.8 per cent., with developmental defects; of the boys 10.8 per cent., and of the girls 8.5 per cent., with abnormal nerve-signs; of the boys 2.8 per cent., and of the girls 3.2 per cent., with low nutrition. Much of the book is an elaboration of these three points, the analysis of which, in each case, is made with great completeness. For average heights and weights the well-known results of Dr. Bowditch are adopted. The study of postures as signs of brain-conditions is particularly complete, and is supplemented by numerous illustrations. In the analysis of "nerve-signs" that indicate general brain conditions, Dr. Warner has made an original contribution to practical pedagogy. In this respect, it is not too much to say, he has produced a work that for practical suggestiveness has not been equaled. When elementary teachers have mastered the fundamental methods of observing children, as set forth in this volume, and can apply them, teaching will have become a profession as distinct as that of law or medicine.

Dr. Warner's extensive investigations have not been without results, although these are hardly to be found in the "propositions concerning childhood" paraded with the pomp of italics in the closing pages of the book. The labor would indeed be in vain if an investigation of one hundred thousand school children led to nothing further than such generalizations as, "the main classes of defects among school

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children include a larger proportion of boys than girls," and "children with indications of brain disorder, *i. e.*, abnormal nerve signs, are often dull pupils." Fortunately, however, in one important point at least, Dr. Warner has made on a broad inductive basis, a perhaps permanent contribution to science, and that is in his analysis of types of childhood, and particularly of groups of children below the normal. While avowing difficulty in forming any definition of children unfit for the general education given in the public schools, he distinguishes, nevertheless, five groups of children to be found in the community, requiring, in his opinion, special care and training. These are (1) children feebly gifted mentally, (2) children mentally exceptional, (3) epileptics, (4) children crippled, paralyzed, maimed, or deformed; (5) children dull and delicate, with defects in development and abnormal nerve-signs. The differentiating characteristics of these cases are set forth with varying degrees of completeness. They will repay careful study on the part of anyone concerned in the care and training of children.

While no intelligent person can read the book and not feel himself much better qualified for the accurate observation of individual children, as a contribution to science the book has disappointing features. It is at once the merit and the defect of Dr. Warner's work that it deals comprehensively but almost exclusively with the physical characteristics of the child. While very suggestive mental tests are mentioned, they only serve to emphasize the need of a more adequate and extended plan for the determination of the mental characteristics of the child, such as at present is being projected in this country by a committee of the American Psychological Association. And, even so far as the determination of physical characteristics is concerned, it would seem that, from so extensive an inductive investigation, we ought to have had something more positive about the normal child. Exact measurements and descriptions of the school children of different ages who were found to be "normal" would have allowed a more positive statement than the one that, "From the school point of view, children may be classed as normal, if not found to be dull and backward for their age in lessons and in mental ability; while to observation they present the

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signs of healthy development in body, in nerve-signs, and in nutrition."

The book is rounded out by elementary chapters on the body of the child, the brain and its development, and by supplementary chapters on adolescence, hygiene, and health management during school hours.

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An outline introductory to Kant's Critique of pure reason—By R. M. WENLEY. New York: Henry Holt & Co., 1897. iv, 95 p. 60 cents.

Abbreviations or condensations of any work are always dangerous experiments, and, usually, of doubtful value; but, if they are to be allowed at all, surely they may be admitted in the case of Kant's *Critique*. Professor Wenley is well aware of the dangers to be avoided and steers his course with satisfactory discretion. His purpose is to give students a general idea of the main drift of Kant's argument, in order that, in reading the work itself, they may appreciate the relation of the parts to the whole, and not be confused by the mass of detail and repetition which encumbers the main argument. In this respect the book may be compared with Professor Watson's *Selections*, which has the same purpose of clearing away rubbish in order to bring out the general outlines; but, in the one case, we have the outline in the language of the historian, in the other it is in that of the author. I believe Professor Wenley's method to be the better. The aim of both is to introduce the student to the original itself, not to furnish a substitute for the original. Professor Watson's method gives so much of the work that the student is tempted to rest content short of the whole. Professor Wenley adopts the celebrated principle of Sam Weller's valentine, and makes the student wish, or at least need, more. His outline does not stand between the reader and his task, but conducts him to it.

The book is unequally divided between an historical introduction, comprising about a third of the volume, and the synopsis of the argument itself. The former part contains

simply the main presuppositions of Kant's philosophy, and is as good as space will allow. It might perhaps have been omitted altogether, since the student will necessarily seek a more detailed account of the subject, and every teacher will prefer his own method of leading up to the text. In the second part there are a few misprints. The omission of *but*, in the sixth line of p. 35, gives the exact contradictory of the true meaning. The line should read: "Therefore there cannot *but* be an *a priori*," etc. On p. 43, *of* is omitted in line 9. On p. 45 the author verbally contradicts himself in two consecutive sentences, where he states that the *a priori* nature of the categories "stands in need of proof" and yet is "self-evident." A slight explanation would make his meaning more consistent in the two cases. It is to be regretted that there is no express account of Kant's idealism and the nature of *noumena* and *phenomena;* but perhaps the author considered these problems too difficult for the beginner. A very brief vocabulary and list of definitions completes the book, which is certain to be welcomed by all instructors in the critical philosophy.

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NOTES ON NEW BOOKS

Notice of books in this place does not preclude extended critical notice hereafter

Professor Carruth of the University of Kansas has prepared a very helpful and well-made edition of Schiller's *Wilhelm Tell* for school and college use (New York: The Macmillan Company, 1898. 246 p. 50 cents).——A late number of Heath's excellent Modern Language Series is *Die Komödie auf der Hochschule*, by Friedrich Helbig, carefully edited by Professor Benjamin W. Wells of the University of the South (Boston: D. C. Heath & Co., 1898. 134 p. 30 cents).——Mr. C. W. Powers contributes to the Oxford Manuals of English History a compact little volume on *England and the Reformation*, 1485-1603 (New York: Charles Scribner's Sons, 1898. 143 p. 50 cents).

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EDITORIAL

No more virile and refreshing paper has appeared in some time than that by Professor Münsterberg, director of the psychological laboratory at Harvard University, which was printed in the *Atlantic Monthly* for February. Professor Münsterberg's paper is entitled "The danger from experimental psychology," and it is addressed to teachers who have been led to believe that, in some way or other, a basis of educational theory and a criterion of educational method can be furnished by the measurements now so generally and so properly in progress in the psychological laboratories.

Sober students of education have been pointing out for some time past the illusory character of the belief that somehow these laboratory measurements could be applied in the technique of schoolroom work; and we have been waiting to see someone step out from the ranks of the psychologists and call attention to the utterly unphilosophical and unscientific character of this assumption. Professor Münsterberg has performed this service in a masterly manner, and while the representatives of the other view may wriggle a little in his powerful grasp, they will find that their occupation and influence are gone.

Professor Münsterberg's stand is not a new one, for he expressed the same opinions three years ago in a notable address before the Massachusetts Schoolmasters' Club. But he now appeals to a much wider audience, and is able to illustrate his argument by reference to a recently published book on psychology that may fairly be described as atrocious, having regard solely to its absolute defiance of logic and scientific method. Professor Münsterberg has no difficulty in showing that the claim of this book to expound a new science is a mere juggling with words, and that its attitude toward both psychology and education is dangerous.

It is indeed helpful to read the words of a leader of mod-

ern psychological investigation when he brushes aside all subterfuge and says, "I have never measured a psychical fact, I have never heard that anybody has measured a psychical fact, I do not believe that in centuries to come a psychical fact will ever be measured. . . The time we measure is not the time of the primary mental experience, but the time of physical processes into which we project our mental states. . . We can say that, whenever psychical facts have been measured, either physical facts were substituted, as in our most modern tendencies, or psychical facts themselves were falsely thought after the analogy with physical objects."

The whole subject of the relation of psychology to education will now be discussed in a new light, and some of the errors and blunders of the past fifteen years may be corrected and repaired. The study of psychology has been too often urged upon teachers from a false point of view and in the hope of reaching unattainable results. Text-books have been published without number, each more misleading than its predecessors,—if that be possible,—and the subject has been widely and conscientiously studied by teachers. But not finding the immediate "practical application" that they had been promised, teachers have grown first weary, then distrustful, then antagonistic. They are not in the least to be blamed. The past must be wiped out and a new beginning made.

Professor Royce put this matter forcefully and, we believe, rightly, when he wrote in an early number of this REVIEW [1] that what the teacher needs is not a "system" of psychological science nor an exhaustive study of "the powers of the human mind," but rather the psychological spirit: that is, the love and the skill that are required for the purposes of mental diagnosis. To this the flood of modern psychological literature, with its tables and formulas and misleading generalizations or ungeneralized masses of detail, has made only the most meager contribution. There are signs, happily, that the extremists have had their day; that their unsci-

[1] I: 124 (February, 1891)

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entific methods are being exposed and are exposing themselves, and that, in the future, saner and more rational views of the service that psychology can render to education are to prevail.

It is interesting to observe that Professor Völkelt, of the chair of philosophy and education at the University of Leipzig, in an address reported in the last issue of *Das humanistische Gymnasium*, takes very much the same ground as Professor Münsterberg. While pointing out the close relations that must exist between psychology and education, Professor Völkelt warned his hearers against overestimating the value and mistaking the character of the relationship. His entire address will well repay study.

It is doubtless hard for many persons in other parts of the country to realize that when intelligent New Yorkers refer to the leaders of Tammany Hall as savages and barbarians, they are using the words literally as anthropologically descriptive, and not figuratively as terms of personal abuse or of political controversy. The hordes of Alaric and Attila were on the same relative plane of civilization as those of Croker. Mayor Van Wyck, of course, is a mere captain of the guard, and of no importance whatever. Croker recently expressed approval of the Mayor's first few weeks in office in these words: "Van Wyck is all right. He does just what he is told, and blackguards everybody else."

We state these facts, of great and permanent importance to the future historian of Western civilization, for the purpose of properly introducing a verbatim report of one of Mayor Van Wyck's numerous exhibitions of savagery. What we cannot reproduce, unfortunately, are his voice, mien, attitudes, and general behavior during the performance.

The colloquy in question took place on January 27, at a meeting of the Board of Estimate and Apportionment, held for the consideration of the budget for the current year. President Hubbell of the Board of Education was present to explain and defend the estimates from his department. The

Mayor based his questions upon some written notes which he held in his hand, and that are said, doubtless with entire correctness, to have been furnished by a group of Tammany principals and assistant superintendents. The New York *Sun* reported what happened thus:

"I notice that there is a decrease in the appropriation asked for for teachers; plain teachers, I mean; the same as you and I had when we were boys," said the mayor. "We stand here ready to give money for education, but not for tomfoolory."

"We are in entire accord on that proposition, too," said Mr. Hubbell, after which he explained that if a less sum was asked for it was because of a readjustment of salaries. It afterward turned out that the mayor was mistaken, and that instead of a decrease there was an increase asked for for the pay of teachers. The mayor then turned to the item of three high schools for which an appropriation was asked. "We would like to have the benefit of your experience as to the advisability of establishing these schools," he said.

"They are to cover the break between academic education as represented in the College of the City of New York and the Normal College and ordinary education as represented by the grammar schools," replied Mr. Hubbell, "We find that the people like them. All the leading cities of the country except New York have had them for years. We have been a trifle behind in that respect."

"Is it true that the three principals of these schools were brought from out of town, one from Massachusetts, one from Philadelphia, and one from Kansas City?"

"It is."

"Why didn't you get them from New York?"

"We did not think it just or wise to put anyone at the head of these schools who had not had experience in high-school teaching. There were no high schools in New York; therefore we could not get the principals here."

"Why didn't you choose them by competitive examination?"

"Because scholastic ability is not the only requirement necessary. Besides we had but one applieation from New York."

"But you shut New Yorkers out of the contest by requiring experience."

"We did, because we didn't think it proper to put underlings at the head of these schools."

"Whom do you call underlings?" asked the mayor loudly.

"Why, teachers who are below the grade of principal," replied Mr. Hubbell sweetly. "I used the word in no offensive sense."

"If that is your excuse, what about these assistants? How many of them are there, and how many are residents of New York?" Mr. Hubbell was obliged to turn to one of the clerks of the Board of Education to help him out on the statistics demanded. He explained that he had received the notice to appear before the board only one hour before it convened.

"That's it," said the mayor. "We have the feeling that clerks run the education of the city."

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"We will be glad to disabuse your mind of it," said Mr. Hubbell, bowing again.

Finally it was developed that of the sixty-four assistants appointed thirty-three were non-residents.

"Why do you bring in these non-residents?" inquired the mayor. "The money to run the schools comes from the people, and the teachers should be selected from among them."

"We engage non-residents because we are of the belief that the people of New York are entitled to the best in the land."

"The people of New York are the best in the land."

"Precisely," retorted Mr. Hubbell. "That's why we want to give them their just dues."

"I see you have a superintendent of music at $4500. Now who is he, and what does he do?"

"The music superintendent is Mr. Frank Damrosch."

"Does he ever go into the schools and teach music?"

"He does."

"How many times?"

"I am sure I don't know, as I don't keep the records," replied Mr. Hubbell, smiling.

"Why don't you find out?"

"We are abundantly satisfied with his work as it is," returned the president of the school board.

"Hasn't Damrosch got twenty-one assistants?" persisted the mayor.

"I cannot answer offhand, but I should say he had not. Eleven is the number, I think. These assistants get $1000 each. They give instructions to both pupils and teachers."

"They were all hired upon the recommendation of Mr. Damrosch, weren't they?"

"I believe so."

"Of course he would recommend anyone for $4500 a year," said the mayor.

Then it was developed that there were 131 teachers of music in the public schools, but the mayor lost interest in them when he found out that besides playing the piano for the opening exercises morning and afternoon they performed the duties of regular teachers.

"Who is the superintendent of manual training down here for $2500 a year?" asked the mayor.

"Dr. Haney," was the reply.

"What are his qualifications? Is he a prizefighter?"

"He didn't include that in his accomplishments when he came to us," replied Mr. Hubbell, "but he may have acquired it since."

"How much time is devoted to manual training?"

"Four hours a week."

"Isn't that too much time to take from the A B C's?"

"Oh, no! The pupils are better equipped to tackle the A B C's, as you call them, after their eyes and hands have been trained."

"You teach boys to sew, don't you?"

"We do not. There was a time, however, when the schools were

crowded, that boys were in mixed classes in which sewing was taught to the girls."

"Where do you get the teachers for the kindergartens?"

"We select them by competitive examination."

"Do you bar New Yorkers?"

"We do not."

"Then you think that there are people in this town capable of teaching in kindergarten schools, do you?" asked the mayor sarcastically.

"I certainly hope so," said Mr. Hubbell, with another deep bow.

"Where do the twenty-eight assistant teachers in cooking come from?"

"They are all from New York except one, who comes from Jersey City, I believe."

"I thought you would get in one non-resident at least," commented the mayor. "Who is the sewing principal whose salary is $2000 a year?"

"Mrs. Jessup," answered Mr. Hubbell.

"Well, she ought to see some of the poor people sewing on shirts. I wonder how long it would take them to earn $2000."

It was then developed that between five and six hours a week was devoted to special work in the schools, while twenty-one hours were given over to regular studies. The total amount asked for the special branches, including supervision, was $180,000.

"Don't you think the schools would be just as good if music, cooking, and sewing were not taught?" asked the mayor.

"I do not," replied Mr. Hubbell emphatically.

The next item on the list was $10,000 for vacation schools. Mr. Hubbell explained that heretofore these schools had been maintained by private charity, with varying results, and that the school commissioners thought they could be operated to better advantage under the control of the board.

"Do you intend to teach the pupils in them music and cooking too?" asked the mayor.

"We may later on," replied Mr. Hubbell.

"Well, if you will teach them A B C's and geography we will give you the money without asking any questions."

"We haven't made any contracts with the scholars in regard to what we shall teach them," said Mr. Hubbell.

The subject of teachers was taken up again, and Mr. Hubbell said that the board was still short 100. He said that new schools were opened so rapidly that the entire supply of teachers in New York had been exhausted.

"You so humiliated the teachers of New York that they are not efficient under your board," said the mayor.

"We don't understand that to be a fact, sir," replied Mr. Hubbell.

Then he turned to a group of school commissioners who stood behind him and said: "Have I got to stand this ordeal much longer?"

"Yes, yes; go on," replied one of them. "You are doing all right. Don't let that blatherskite rattle you."

Mr. Hubbell smiled and went back to the fray. The mayor wanted to know the difference between manual training and physical training. Mr. ubbell explained briefly.

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"Well, they didn't have those things in the schools when I was there," said the mayor.

"Nor when I was there either," retorted Mr. Hubbell, "and I have thought it was a mistake ever since."

"Does the physical instructor teach boys to box?"

"No; but he teaches them to be self-reliant and sturdy."

"Can't the public schools be run without the expense of high schools and manual training?"

"The results obtained would not be so good," replied Mr. Hubbell.

"But these experiments and these dreams have brought you here asking for an increase in the appropriation for public schools of twenty per cent. In five years the school appropriation will amount to $10,000,000."

"Ah, but it is not fair to assume that such an increase will be constant. What is more, the people have always responded liberally to these demands. Then, too, you seem to forget there is an increase of 20,000 in the number of school children."

"Did you have a competitive examination recently for grammar-school principals?"

"Yes; we have had many of them."

"Who were the teachers selected?"

"I can't tell you. I do not carry the name of every school-teacher in New York in my head."

"How much time do you spend at the Hall of Education?"

"One hour every day, and longer when the necessity arises. Besides, I am always at call through the day in my office."

"You do not give the place sufficient time," said the mayor. "A man who only spends one hour a day on the business of the Board of Education ought never to be its president. What do you think would become of this office if I only spent an hour a day here?"

Mr. Hubbell smiled. "I give more time to the public schools than any of my predecessors did," he said. "Besides I do not think it is expected that the president of the Board of Education shall devote his whole time to the schools."

"If I were the president of the Board of Education I would visit every school in Greater New York at least once a year," said the mayor severely.

"I visit quite a few myself," replied Mr. Hubbell serenely.

"Oh, you do," said the mayor, glancing at a number of sheets of yellow paper which were lying on the table before him. "Did you ever see a boy of nine years working on color drawing?"

"No, sir; I did not."

"Then you didn't observe very closely."

"Do you know the school in St. Ann's Avenue near 145th Street?"

"I never heard of it," said Mr. Hubbell.

"There is a school at 154th Street and Amsterdam Avenue," put in Commissioner Mack.

The mayor looked at the yellow sheets again.

"That must be the one," he said. "Now, Mr. Hubbell, you have a principal there who gets $3250 a year, have you not?"

"Yes, sir."

"You also have an expert in pedagogy to teach him his duties, have you not?"

"No, sir."

"Do you mean to say that you haven't in the public schools teachers to teach teachers how to teach?"

"There are fifteen assistants to Mr. Jasper, the superintendent, who are teachers of teachers."

"What is the Normal College for if you must have teachers of teachers?"

"Unfortunately they do not take boys at the Normal College," replied Mr. Hubbell, "and pedagogy is not taught in the College of the City of New York."

This ended the two-hour battle, and the mayor moved to refer the budget to the comptroller.

This bit of local history is respectfully commended to the earnest attention of the teachers of the United States, with the single comment that this man is to be Mayor of New York until January 1, 1902. As the *Evening Post* dryly remarked, he can do nothing more to disgrace the city except to strip to the waist and sit at his desk in red paint and feathers.

Happily, however, the provisions of the Charter protected the schools of the city against immediate capture by the Tammany braves. Despite the urgings of Mr. Jasper and his cohorts within and without the school system, and despite the cunning with which schemes were devised for "beating the Charter," the Tammany lawyers, with the best intentions in the world, could not advise the Mayor to begin a fight for the control of the school board that was certain to end in inglorious defeat in the courts. So it happens that the new city-school system will be organized and put in motion not only by its friends but by men of intelligence, honor, and probity. The control of it will pass into Tammany's hands in two years, but, before that time comes, wise policies will be introduced and a sound administrative system organized that will go far toward perpetuating themselves.

Shortly after this issue of the REVIEW reaches its readers it is likely that a city superintendent of the schools of the new city of New York will be chosen. Of the nineteen men who form the central Board of Education, certainly fifteen,

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and perhaps even a larger number, are thoroughly representative and progressive men. While prophecy is dangerous, yet as these words are written it seems all but certain that Dr. William H. Maxwell, for ten years superintendent of the schools of the city, now borough, of Brooklyn, will be chosen to the new position. Dr. Maxwell has the undivided and enthusiastic support of the best and most enlightened friends of the schools in both New York and Brooklyn, and of a large and influential section of the newspaper press. By character, scholarship, training, executive capacity, experience, professional standing, and special knowledge of the local educational conditions, he is ideally fitted for the great office for which he has been put forward.

The only other name that has been seriously considered at any time is that of President Draper of the University of Illinois. The citizens of his adopted State, and the officers and alumni of the university over which he presides, may well feel honored that the reputation which President Draper left behind him in New York is of such a character that, when any great administrative post is to be filled in the field of education, the thoughts of New Yorkers turn at once to their great State Superintendent. But President Draper is happy and contented in his present work, and in addition to supporting vigorously the candidacy of Dr. Maxwell, he let it be understood that the use of his own name was not authorized in any way, and that he could not appear as in any sense a candidate for the city superintendency. There could, of course, be no contest or controversy between President Draper and Dr. Maxwell in a case like this. They are not only warm personal friends, to the extent that either would cheerfully yield precedence to the other, but they stand for the same educational ideals and for the same educational methods. It is a day of good omen for New York, and a situation that the wildest imagination could not have pictured five years ago, when no names but those of these two great educational leaders are under consideration for the city superintendency.

The re-election, by the New York legislature, of Superintendent Skinner for a term of three years, is a cause for con-

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gratulation. It is peculiarly gratifying because of the unfair and unscrupulous character of the opposition to him that developed just before the election took place. What the State escaped, through the inability of Tammany Hall to defeat Mr. Skinner, may be gathered from the fact that, as a candidate against him, the Tammany representatives voted for the adjutant general and chief of staff of Mr. Jasper, a man who took the precaution to join King Croker's Court club as soon after January 1 as possible.

Mr. Skinner's re-election leads us to suggest that he and Secretary Dewey should now put their heads together and promote efficiency while saving money, by stopping the reduplicating and paralleling of work by the Regents' Office and the Department of Public Instruction that has gradually grown up for some time past. In reality the two departments ought to be two divisions of a single State department of education. The Constitutional Convention of 1894 would have brought this about had either Mr. Draper or Mr. Skinner been State Superintendent at the time. But with a man of Mr. Crooker's caliber, or absence of it, in the place, it was impossible to do anything. Secretary Dewey and Superintendent Skinner, however, are interested in education for its own sake, and it would be easy for them to bring about a satisfactory arrangement of the work that devolves upon them, free from rivalry, jealousy, or unnecessary duplication, that would soon find permanent expression in the statutes of the State. So long as two distinct departments are maintained, there must be a clear line of division drawn between their respective duties and responsibilities. Both custom and good sense indicate where this line should be. The care of the elementary schools, unfortunately cut up into over eleven thousand school districts, and the task of providing teachers for them, belong absolutely to the Department of Public Instruction. Secondary and higher education belong to the Regents. The old preliminary certificate of the Regents, given for proficiency in elementary studies, ought to be given by the State Superintendent, and by him only. The Regents have no business with it. The State Superintendent should issue it and the Regents accept it without question, as much so as if it were a court record.

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On the other hand, the Department of Public Instruction should give similar unqualified credit to the Regents' credentials and avoid paralleling their examination system for any purpose or in any degree. New York State is cursed by too many examinations now: it is examination-mad, and to develop a second set of tests, parallel to the first, is an indefensible waste of money and an inexcusable educational blunder. A New York State principal recently directed our attention to the fact that within one month his school had been inspected three times by three different officers from Albany. As his school was a secondary school it fell, of course, properly under the jurisdiction of the Regents, and the Regents' records concerning it were entitled to official acceptance by all other State officers.

During the last few years a similarly wasteful and indefensible duplication of library work has grown up. This ought to be stopped without delay.

Mr. Dewey and Mr. Skinner enjoy the complete confidence of the teachers of the State, and they owe it to themselves, and to the work intrusted to them, to use that confidence to simplify and economize supervision and administration, and to make a single educational system for the Empire State. They are strong enough to do it, and the best sentiment of the State expects them to do it.

An extremely important bill, reorganizing the public-school system of Boston, has been presented to the Massachusetts legislature. It has been framed by a committee of able and representative men, and has the support of influential elements in the community. The proposed plan takes some features from the New York law and adds some peculiarities of the Cleveland system, but it combines them with other provisions that are new.

The school board is hereafter to consist of twelve persons. Three are to be elected each year, by the voters, for a three-year term, and one is to be appointed each year by the Mayor for a similar term. This school board is to have general charge of the schools, and is to elect a superintendent of schools and a business agent. It is also to organize a

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school faculty and appoint visitors. Up to an amount equal to one-third of one per centum of the total assessed valuation of the city, the school board may fix the amount to be raised and spent for school purposes in any one year. With the consent of the city council it may exceed such limitation.

The superintendent is to hold office during good behavior and efficiency, but may be removed by a two-thirds vote of the whole number of the members of the school board. The appointment, promotion, and dismissal of teachers are vested in the superintendent. His action in these matters is final, unless vetoed by a three-fourths vote of the board. The superintendent shall also, after consultation with inspectors and school faculty, determine all courses of study and choose all text-books and other apparatus of teaching. The inspectors are to be nominated by the superintendent, subject to confirmation by the board, and are to serve for a three-year term. They are to be assistants to the superintendent. Examinations of teachers are in their charge, subject to the superintendent's direction.

A novel feature, borrowed from France and urged upon American school boards by several of the persons consulted by the Committee of Fifteen, is the school faculty. This is an advisory body only, but, if constituted, it is sure to become a most influential one. The school faculty is to be made up of the superintendent, the inspectors, and of not less than thirty more members, who shall be elected by the teachers of the schools from their own numbers. Visitors are provided for, with duties similar to the New York inspectors.

A striking feature of the Boston bill is its simplicity and directness. It is all included in fifteen short sections, and covers only seven printed pages. New York legislative habits and conditions required a far more lengthy and complex measure.

For Boston the bill would bring about an absolute revolution. The superintendent of schools would cease to be a dignified figurehead and become an almost unequaled educational power. The management of minute details by the school committee would come to an end, and the modern

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administrative device of concentrating power and responsibility would be fully and frankly adopted. It is inconceivable that so radical a measure will not be strongly opposed, and the sources of the most active opposition may safely be predicted. The enactment of this measure would be an inestimable gain, even if every provision should not work as well as is now expected.

President Canfield's annual report to the Trustees of Ohio State University contains a capital discussion of coeducation that we should be only too glad to print in full. We can find space, however, for the following extracts only:

It is noteworthy that the theory of coeducation has been so generally accepted as settled and practically beyond dispute that the index of current literature for ten years contains not more than a dozen references to this question; and an examination of these shows but three or four articles of special length or value. No educator of high standing, well read in psychology or pedagogy, longer questions the fundamental propositions that women desire, deserve, appreciate, and are strengthened by higher education; that it is unquestionably to the advantage of the whole race and to their half of it that women have the best education attainable; that there is less nervous strain upon women under coeducation, and therefore better health and wiser and more natural physical conditions; that the great mass of those who have been coeducated believe in coeducation, and prefer it for their own children; that as men and women are intended for mutual service the best and most natural training is that in which they are trained together; that this inter-training and equal training takes the simper out of the young woman and the roughness out of the young man; that whatever faults in manner of association are seen are rather those of the community than of the system of education. Anyone taking a counter position to-day would be considered first cousin to that German professor who, when he heard of the thousands of young women at work in American colleges and universities, independent in thought and life, exclaimed: "May God forgif Columbus for that he discovered that America." But with the acceptance of the education of women and of the higher education of women and of coeducation, we have very generally gone to the other extreme—and insisted that women are to have education identical with that offered men—a theory and practice which is accountable for much that is strained and unnatural in the present social and economic relations of the sexes. The insistence with which this has been urged is partly due to a semi-chivalrous feeling that nothing is too good for our women, partly to the slowness with which the universities establish new curricula, and partly to the fact that pedagogy is really a new science with us, and the greater number of those engaged in instruction in American colleges and universities have little if any knowledge of its importance or its discoveries. It is unquestionably true that the aver-

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age college or university faculty takes fewer educational journals, reads less in pedagogy, and has more imperfect knowledge of the relative educational values of different subjects and courses than almost any other body of teachers in the land. Something of this is pardonable because of the great pressure upon the time and strength of the average American instructor. Then, too, the infinite amount of "stuff" that has been put out in the name of pedagogy has much for which to answer in this connection. But the chief cause of this is the fact that the strong faculties—and they are the only faculties from which to expect advancement—are made up of specialists, who know their own work well and believe in it, as they ought; but who study it almost entirely from the standpoint of investigation and research as to its own essential conditions and characteristics; and little, if at all, from the standpoint of its relations to other work, or of its true place and value in its relations to the gradually unfolding mind of youth. It is quite safe to accept at nearly its face value the recent statement of the president of one of the strongest American universities, that it would be quite unusual to find in any one faculty more than three men who understand their own work from the point of its psychological and pedagogical relations to the student, or who had ever given this subject much thought. Indeed he said that this is so true that when a chair of pedagogy was established in his own institution, and one of the most renowned authorities in this subject secured for this work, the lectures of the head of the new department upon the relative values of university studies were taken to be personal criticisms upon other members of the faculty; these made common cause against the "interloper"; and it was a full year before the breach could be healed. It is not surprising therefore that the universities have moved slowly toward the establishment of rational and helpful and definite instruction for women.

The influence of a good example in education spreads rapidly. The provisions of the admirable reform-school law, adopted for New York in 1896, have been closely followed in framing a new charter for the city of Baltimore by the commission of which President Gilman is a member. It is reported that the special committee appointed by Mayor Harrison of Chicago on the school administration of that city are giving careful attention to the New York law.

The annual report of the secretary of the University of the State of New York to the regents contains a new feature of general interest in a large map of the State, 16 by 12 inches, with the location of each institution in the University indicated graphically. The 30 colleges and universities are marked by small black squares, the 120 academies by tri-

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angles point down, the 480 high schools by triangles with point up, the 7 law schools by the letter L, the 14 theological schools by T, the 49 other professional and special schools by S, while the 138 libraries thus far formally admitted to the University are marked by small crosses. The map shows that, of these 838 institutions in the University, the city of New York has 51, Brooklyn 19, Buffalo 17, Rochester 7, Albany 16, Syracuse 7, Troy 9. The map is separated by heavy lines into the nine geographic divisions used in classifying local history in the State library. This grouping of the sixty counties does not correspond to any of the divisions of the State into congressional, senatorial, or judicial districts or judicial departments, because these divisions change from time to time with the unequal growth of population and with changes in the laws. Libraries find it necessary to have some fixed division which can be used regardless of these frequent alterations, and this map reprints the division which seemed most convenient and natural for these permanent uses where some unit smaller than the entire State and larger than a single county was needed. This grouping is often used to show growth, needs, wealth, or other statistics of certain sections of the State. The nine groups are: 1, New York city; 2, Long Island and vicinity of New York; 3, southeast counties; 4, middle east counties; 5, northern counties; 6, north central counties; 7, south central counties; 8, west central counties; 9, western counties.

The map is a revelation of the wealth of New York in higher educational institutions, and to all who have occasion to study their distribution through the sixty counties it will be a great practical convenience for reference. It is bound in with each report and extra copies can be had from the State library for a nominal sum. The only criticism to be made upon the map is that the markings do not stand out as clearly as they should. A color scheme, such as is used on the similar map issued by the Prussian government, would be more helpful.

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